

**SUPPORTING ENVIRONMENTAL EDUCATION IN NAMIBIA
(SEEN)**

**AUDIT OF NAMIBIAN CURRICULUM FOR
ENVIRONMENTAL EDUCATION**

WORKING DOCUMENT

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EXECUTIVE SUMMARY

Brief:

- To identify environmental themes through which topics/issues of priority importance in Namibia may be taught.
- To audit the curriculum using this thematic framework to identify concepts, skills, values, ethics and attitudes contained in each subject within each phase level in order to provide a conceptual map detailing scope, scale and progression of key environmental concepts between different subjects at different phase levels in order to show this progression from grades 1-12
- To analyse this ‘conceptual map’ thematically in order to: Highlight evidence of progression, assess degree of repetition both in one subject and across subjects of environmental concepts and competencies and make recommendations for greater coherence, note omissions and gaps both of themes and within themes

Revised Brief:

- To identify environmental themes through which topics/issues of priority importance in Namibia may be taught.
- To audit curriculum using this thematic approach to identify presence of themes in each subject, within each phase level.
- To analyse ‘conceptual maps’ according to highlighted topics, location and progression (if any).

Process:

The method of auditing the curriculum is commented on throughout the document as each ‘section’ of the audit is addressed. Below find a summary of audit process.

- A careful reading of key documents.
- Draft themes developed from these readings and colour coded for Grades 1-4.
- An attempt to map themes according to concepts, skills, values ethics and attitudes for each theme.
- Irregular patterns in curriculum made this map tedious, long and over- detailed. (Detail had to be included to justify why particular topics were EE related as this tended to be implicit rather than explicit)
- First Progress Report
- Comments gained from progress report and information gathered by Alistair McMaster informed a revised version of the themes. At this stage sub-themes for each theme were also developed.
- Themes colour-coded according to these revised themes from Grade 1 – HIGCSE. Evidence of themes was looked for in the themes and topics of individual curricula, learner objectives and Basic Competencies.
- Findings were mapped according to location of themes in the curriculum at sub-theme level.
- An in-depth mapping of material within themes was attempted for the theme of Natural Resources. This was an attempt to map progression as well as highlight repetition and gaps. Considering the amount of detail in this table and the time it takes to put together, that this step will be put on hold until the working document has been reviewed.
- Second progress report submitted
- Findings were mapped according to topics that related to specific themes.
- A table of possible carrier subjects/learning areas has been developed and discussed.

Key findings

- There is no obvious thematic approach to EE within the Namibian curriculum. EE tends to be approached as an ‘add on’ or exists haphazardly within subject content.
- Curriculum material that directly addressed the themes does so from within the constraints of the subject. For example, Population Dynamics/characteristics is a topic in Geography. This is a relevant issue/topic of priority in Namibia. At first glance it looks as though the subject Geography is addressing an important environmental issue. This is not necessarily the case. Population Dynamics are approached within the context of understanding and collecting data about a population. Issues relating to this information are usually ‘add-on’s.
- A thematic approach to environmental education is uncommon according to Alistair McMaster’s findings (See A. McMaster, 2003).
- Topics have been identified for each sub-theme within a theme. Topics tend to be found within more than one sub-theme within themes as well as across themes. This will allow for an integrated development of the themes across the curriculum.
- Particular themes are located within particular subjects and learning areas right across the curriculum. For example, Natural Resources is found in the learning area of Natural Scientific from Grade 1 to HIGCSE.

Findings, thought and questions

- Conceptual clarity: Certain terms such as ‘progression’ need to be explored. Without knowing the type of progression I was looking for it was very difficult to develop a way of mapping it.
- It is important to be clear about what is meant by the term ‘sustainability’. It can be viewed as the foundation term/concept on which reform in EE is based within the Namibian curriculum. If this is the case, the meaning behind the word needs to be clarified in some depth. According to the discussion document on EE in the Namibian Curriculum (Murray, ?), sustainability is related to resource use. In the curriculum sustainability more often than not referred to as ‘economic sustainability’. The discrepancy between the use of the two terms could be confusing.
- It is important to state why a particular approach has been chosen. It would have helped tremendously if the thinking and reasons behind developing a thematic approach to EE in the curriculum was clearly stated and understood.
- Attitudes & Values: How will attitudes and values fit into specific themes? Is this possible or should attitudes and values (and possibly even skills) be linked to carrier subjects/learning areas AND themes?
- A trend in the audit is that particular themes are found within particular subjects and learning areas. This means that particular learning areas or subjects can become carriers for themes throughout the curriculum. The possibilities of this needs to be explored in more depth with regards to how carrier subjects would fit into the overall framework and epistemology of the Namibian Curriculum, whether there are other curricula that use the ‘carrier subject/learning area’ model for environmental education. If so, how do they make this explicit. Can carrier subjects/learning areas also carry particular attitudes, values and skills that are relevant to environmental education?
- The in-depth mapping of topics in the curriculum has not been completed. This process would be more useful once themes have been finalised and concepts, values, attitudes and ethics decided on for each thematic strand..

INTRODUCTION

This is the first time I have attempted such an audit. It has been both challenging and frustrating and at times I have struggled to keep a focus on what is really needed. There is still a sense that much more can be done and it is hoped that comments from this working document will redirect the final stages of this research process.

Document format

All diagrams and tables that map the curriculum have been incorporated into the document rather than put into appendices. This is because the maps form the foundation of all information gathered from this audit.

I have also included text boxes in the document for critical comments, reflections and questions that occurred to me while doing the audit. The document consists of three main sections:

1. An exploration of, what is perceived to be the foundation concept around which EE in the Namibian curriculum aims to be situated.
2. Developing the themes that will be used for the audit.
3. 'Conceptual mapping of the curriculum with brief discussions.

Method

Some assumptions about EE:

Response and Process: Environmental Education has been viewed as a response and a process. A response to environmental issues that threaten our use of natural resources, and a process of redefining and changing our way of relating to the world around us and to each other. This has influenced the way in which I have gone about developing the themes for the audit.

Action: As a response EE should be based in action. This assumption of change is one of the foundations to a critical approach. This move towards change also encapsulates a move towards some sort of 'betterment' for all. Although I approach these assumptions with caution, there is a strong understanding that environmental learning should lead to action which changes the current way in which humans relate to environment. In order to do this, learners need to have an understanding, not only of the issues, but the aspects (social, political, biophysical and economic) that influence humans' decisions around resource use. They also need the necessary skills to be able to initiate such change. Does the curriculum support these requirements?

Integrated: EE acknowledges the interconnected and integrated nature of environmental issues. The biggest challenge in addressing environmental issues is becoming aware of the many facets of each issue and how these interconnect with other issues and challenges. EE therefore needs to work towards an integrated approach. Learners need to develop the skills to be able to integrate different 'constructs' in order to make decisions about their own behaviour as well as others. Themes have been developed so as to, hopefully emphasis integration.

Process of auditing the curriculum

The process is discussed in detail for each phase of the audit. All curricula were audited except language curricula that were not English.

Below is just a brief summary of the six major steps.

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1. Becoming familiar with key documents.
2. Developing the themes
3. Colour coding the curriculum according to themes
4. Mapping themes according to topics
5. Mapping themes according to location
6. Mapping carrier subjects/learning areas for themes

Some issues

- It was difficult not to include too much detail in the audit. I often found that detail had to be included to justify why particular topics were EE related as this tended to be implicit rather than explicit. My dilemma was whether to mention this detail as possible areas for further development.
- To begin with, the aims of specific curricula were taken into consideration when looking for evidence of themes. This was abandoned when there was very little consistent evidence of this in the actual curricula. If the material did exist it tended to be implicit rather than explicit.

This document is a work in progress. The present challenge has been to develop ‘conceptual maps’ that are useful and informative without getting lost in detail. The future challenge will be to analyse these maps in more depth.

A FOCUS ON SUSTAINABILITY

The scope of this audit is to develop themes that represent issues/topics that are of priority importance to Namibia's development, in relation to environmental issues. In developing these themes, a series of questions were created with the assistance and guidance of Ursula van Harmelen and Alistair McMaster. These questions helped clarify the vision, issues and needs of the existing curriculum and National framework. These then fed into the development of environmental education themes that can be assimilated into the formal curriculum.

What is the vision of environmental education in formal education in Namibia?

What issues/topics are considered to be of priority importance in Namibia?

What is the core concept around which knowledge, skills, values, ethics and attitudes are focused?

In other words, what "change" do we want to initiate through the intervention of EE in schools?

Reflection

I use the word intervention consciously as all educational processes are in one way or another subjective interventions into the lives of children in the hope that certain behaviours, values and attitudes will develop. Most environmental educators start from the assumptions that the environment is in crisis and that this crisis is the result of a particular paradigm within which humans have functioned in the past, and that education is a potential solution to this crisis.

Namibia's vision for EE in the formal curriculum

From previous reports/documents the following vision for EE seems to emerge.

7. Sustainability: There is a strong push for EE to focus on 'education for sustainability'. The Namibian National Constitution draws on the concept of sustainability when focusing on the promotion of peoples' welfare. Namibia's first National Development Plan envisages EE as an important strategy in promoting sustainable development (Murray, S; ?). The draft National Policy for environmental education defines EE as

"the process of developing environmentally literate citizens who are aware of and concerned about the total environment and are empowered through knowledge, attitudes, motivation, commitment, skills and shared decision making to individually and collectively achieve an improved quality of life through the sustainable use and development of Namibia's resources." (NEEN, 2000, ?)

The *Desktop Analysis of Environmental Education within the Namibian Basic Education Curriculum* (Enviroteach, 2000) draws on the guidelines of Hungerford and Peyton (1993) that are based on the concept of sustainable development. Important environmental topics/issues are identified in the Danced document, *Fundamental issues and threats to sustainable development in Namibia* (?) and the *Namibian submission to the WSSD* (?). Both these documents use sustainable development as the foundational concept in addressing environmental issues. Agenda 21, which is reflected in the Namibian EE policy statement, states that "education is critical for promoting sustainable development."

- Orientation vs. Subject: EE is envisaged as adopting a cross-curricula approach. This is because environmental issues are complex, particularly the concept of sustainability, and they

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therefore need a range of competencies through which they can be explored. EE is not to be seen as a separate subject but rather an *orientation or emphasis* within the existing curricula (Murray, ?).

- **Beyond Biophysical factors:** Environmental education does not only focus on the biophysical but also takes into consideration socio/cultural, economic and political factors. All these factors of EE are considered linked to each other. The focus of EE also incorporates a strong emphasis on addressing issues of the past, particularly systems of oppression such as colonialism and apartheid, which are seen as direct causes of environmental inequality and degradation (Murray, ?).
- **Learner-centred education:** The above wish to address inequality and oppression is further emphasised in EE's proactive support of learner-centred approaches to education, which are guided by the principles of access, equity, quality and democracy (Murray, ?).

In summary the vision of EE in Namibia seems to be the following:

A learner-centred, cross-curricula orientation to learning that emphasises all aspects of human activity in order to develop in learners a sustainable approach to the use of resources.

Topics/Issues of Priority

Issues/topics of priority in Namibia (WSSD, ?) are presented within the context of, or around the concept of sustainability. These issues highlight Namibia's high dependence on resources (land issues, access to natural resources, desertification, water, biodiversity etc) as well as Namibia's institutional and economic development in response to the pressure to function within a global economy (issues of governance, education, entrepreneurship and human impact issues such as HIV and poverty).

It would seem from the issues/topics of priority that sustainability could be interpreted as a balance between perceived human needs and those of the environment. Another way of seeing it would be that to act sustainably is to recognise and understand the capacity of biophysical systems to support people and how not to harm or reduce this capacity beyond sustainable levels. This calls for people to recognise and understand the biophysical systems on which they are dependent and negotiate their own needs and desires within it. By doing this they would sustain both their life 'style' without reducing the capacity of the environment to support them.

The themes presented in this audit highlight areas where opportunities for better management/use of resources can be explored in order to improve the quality of the lives of all people (pers com, Murray, 2003)

Reflection:

This new or revisited view of the human in relation to the environment affects all aspects of life. What is particularly strong about the focus of Namibian issues, in response to the relationship with the environment, is the historical and biophysical landscape that Namibians find themselves in. Thus the focus on the obvious and apparent dependence on natural resources (that Namibians face everyday) and the difficulties of new governance within a post-colonial, post-apartheid global setting. In coming up with themes for this audit, I have focused on looking at particular 'areas' or influences of life in Namibia which are perceived to be imbalanced or not sustainable. From documents given to me, it is assumed that bringing balance to these areas will bring about more sustainable and responsible environmental behaviour. The focus of EE within these themes is to provide the platform and knowledge, skills, attitudes and values needed in order for citizens to negotiate their needs as well as grasp the interconnected nature of these needs and environmental capacity.

A reflection on conceptual development

In this research process the lack of clarity around concepts has made both Alistair and my task difficult. As a learning experience, unpacking concepts can be a useful process. When trying to develop a framework to hold learning, it seems to me that concepts need to be carefully articulated, least they become icons or lost in multiple meanings and contexts. As can be read in Alistair McMMASTER's report, the fact that the concept of progression was not first explored and, in a way, conceptualised, made it difficult to know what to look for. Everything could be read as progression or not, depending on the way one conceptualised and contextualised it. Similarly, my use of the thematic approach, mapping progression of themes and to a lesser extent, the focus on 'sustainability' were hindered by the lack of clearly defined concepts. Of course, this lack of conceptual clarity has become clear only through an attempt to engage with these concepts.

A reflection on finding the balance

I have already mentioned that I understand sustainability to be about keeping a balance between the needs of humans and the needs of the environment and acknowledging that these needs are unavoidably interconnected.

A difficulty with the word 'sustainability' is that the point of balance depends entirely on a person, organisation or countries perspective or understanding of their needs. In other words, people whose environment is an economic business that functions according to the reality of economic rationalism, will obviously see sustainability to mean the continued functioning of the business. This means that any changed behaviour towards the biophysical and social environment that is influenced by their activities, comes about because of a threat to the sustainability of the business. This becomes even more complicated when we realise that one human being does not only relate or exist within one environment but within many and that each relationship to an environment will carry with it certain attitudes and values towards sustainability. For example, the same person who works for the economic business also likes to walk in the forest. When walking, this person gets upset to see litter and trees being chopped down as this deprives him/her of sustaining the pleasure he/she gets out of walking in a forested area. She/he perceives this behaviour as unsustainable.

One of the focuses of EE could be to engage the learner in seeing how all the 'environments' in which he/she functions are interrelated and unavoidably interconnected. That to be sustainable means balancing all areas of life, not just one. This has been a difficult challenge to overcome in developing themes for EE in the Namibian curriculum. I have felt that there is a danger of the themes developing fixed boundaries instead of concentrating on the ways in which these aspects of life work together.

But there is also a danger of EE being too fluid and therefore unfocused. Again the word balance seems to come to mind. It seems the clearer curriculum developers are on what they want to achieve from environmental education in the curriculum the more useful these themes will be in achieving particular outcomes. The themes then become a platform rather than a box for learning and the focus of learning becomes the reason why a particular thing is learnt.

A Critique of 'Sustainability'

The focus on sustainability has been questioned by EE practitioners as mentioned in the Desktop Audit (Enviroteach, 2000). Concerns raised are whether the concept of sustainability is just a blueprint for a particular type of action which may actually constrain our thinking (Jarnet in Jickling in Enviroteach, 2000) and that the concept may invite exclusivity (Jickling, 1999). These are valid concerns. The sustainability concept is in danger of setting up yet another division between human and environment, by the multiple ways in which it can be interpreted. Inevitably the focus of defining unsustainable behaviour is on the clash between human needs

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and the needs of the environment in order to fulfil these human requirements. Education can become 'stuck' in issues or themes that relate to one definition of sustainability.

In dealing with sustainability, if EE is taught within a flexible and questioning framework, the above debates can add to a growing understanding rather than limiting that understanding. If EE is taught within a constricted, dogmatic framework the above issues can become a problem.

DEVELOPING THEMES

A reflection on curricula as a learning framework:

This is my first experience developing a framework for curricula based on an audit of the existing curriculum. My overall impression is how ambiguous a framework of learning really is. Maybe ambiguous is the wrong word but I am struggling to find another that expresses an impression that curricula are not set in stone nor carefully defined boundaries of learning. It seems that the way in which they are developed is in response to numerous issues. In dialogue with Steve Murray this has become even more apparent as he reflects on the different movements, ideas, theories that influence changing curriculums. (Murray, pers comm). According to Alistair McMaster's findings, there seem to be an almost limitless option of varied combinations on how to structure a learning experience. It seems we choose our framework according to how we want education to be perceived and the limitations within which we have to work (the environment – social, political, economic and biophysical).

In trying to work through a thematic framework for EE, I often wondered whether it mattered what approach was used? I still need to remind myself to review the context of a particular framework to understand the importance behind it

The brief:

The brief was to identify themes through which topics/issues of priority importance for Namibia's development could be explored. The themes were to be developed out of core documents that highlighted challenges, issues and risks for Namibia's development. When first getting this brief it was unclear what was meant by 'Namibia's development' but on reading through the documents it became clear that this need for development was strongly linked to the concept 'sustainability' within all facets of human life: the bio-physical, political, social and economic. 'Sustainability' is linked to the use of natural resources and how better management of this use can improve lives.

Reflection:

- Developing themes as a starting point was not necessarily the best way to go about auditing the Namibian curriculum. It would have been easier, and possibly more effective, if the first step was to map what is in the curriculum with a suggestion of possible themes according to topics/issues of priority for Namibia. I often felt I was trying to squeeze the curriculum into themes that I had developed instead of just mapping what is there. Once presented with what is in the curriculum, the next step could have been to develop themes in collaboration with other curriculum developers (based on conversation with Ursula van Harmelen). With this in mind the present themes should be viewed as a mapping of curriculum with issues/priorities as a focus.
- The themes still remain issue-based or content/area-based. I have struggled to find a way in which each different theme could also be a framework for specific skills and values, as these tend to be more generally required and not necessarily specific to one theme. This process of linking specific skills and values will need to be revisited once the audit is complete.

Co-ordinated approach to EE in the curriculum:

The thematic approach had already been identified, by SEEN, as the best way of co-ordinating EE in the curriculum before this audit was commissioned. One of the identified problems with EE in the curriculum (van Harmelen, pers comm) is that it is difficult to track the development of EE concepts, skills and values through the curriculum. Material tends to be addressed haphazardly according to the needs of the learning area rather than the curriculum as a whole. This leads to certain themes (as well as content, skills & values within these themes) being repeated in different learning areas. It also leads to certain topics being covered over and over again, for example water or littering as topics for environmental education. It was envisaged that a thematic approach would be able to address this by developing particular topics that build on each other to be addressed within different learning areas within the curriculum. It would also allow for the mapping of progression of EE throughout the curriculum.

Because of the complexity of EE, the boundaries of what should be learnt are often unclear, anyone can argue that everything is in some way related to EE. The thematic approach could go a long way to clarifying these boundaries making it easier to implement as well as justify EE within the curriculum. This clarity would also make it easier for teachers to understand what outcomes are expected within a particular phase of learning.

Reflection.

- How does a thematic approach link in with current learning theory informing the Namibian curriculum? What are the assumptions informing such an approach? These questions arose in response to trying to understand why a thematic approach and not another approach to EE within the curriculum. As well as trying to understand how this approach feeds into the overall assumptions, approaches and principles of the Namibian curriculum?
- What is Namibia developing towards? If the themes are to address topics/issues of priority importance to Namibia's development it almost seems to follow that this development process needs to be articulated. This has probably been articulated in many policy documents, including the ones given to me (which emphasis a development towards better management of resources as a focus of sustainability) but it seems that this needs to be made even clearer to justify particular themes.
- Should EE be based on a framework that buys into the assumption of progress ie Namibia is developing. The assumption of progress has been critiqued as exacerbating the environmental crisis we now face. This terminology also sets up discriminating terminology such as the 'developing and developed world'. Themes have been developed within the context of Namibia developing towards becoming a sustainable nation. Although this is obviously a valid vision, I feel uneasy about the assumptions underpinning such an approach.
- In the process of developing themes, it was difficult not to get caught up in an overly negative approach. For example, addressing all the things that are 'wrong' with the way in which we interact with the environment. This tendency often perpetuates the alienation of human and environment as well as leading to paralysis rather than action. To counteract this trend, topics/issues were developed around the ways humans interact and are interconnected with environment rather than just addressing issues as problems. The thematic approach quite useful for not getting lost in the 'bad human'. Although, the emphasis on basing the themes on challenges, threats and issues made it very difficult to reconceptualise how these issues should be addressed without overemphasising 'the crisis'.

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An uncommon approach

Alistair McMaster's findings show that a thematic approach to EE throughout the whole curricula is uncommon. The only curricula that overtly states using a thematic or *issue-based* approach throughout the whole curriculum is the England curriculum (See A McMaster, 2003). This is a suggested approach. It is also suggested that this approach is co-ordinated around seven interrelated Education for Sustainable Development concepts being: interdependence; citizenship and stewardship; needs and rights of future generations; diversity; quality of life; sustainable change; uncertainty and precaution.

Developing the themes

I struggled to find a clear direction in identifying themes. The English curriculum uses concepts as themes that run throughout the curriculum. My brief suggested that the focus of the themes should be able to incorporate issues/topics of priority in Namibia. After a first attempt alone, I asked Alistair McMaster to help me by drawing on his findings of what other curriculum structures have been structured with regards to environmental education.

For each theme we developed sub-themes that could carry issues/topics of priority in Namibia. Sub-themes were developed with the intention of covering important concepts/aspects of themes. For example, 'Society and Governance' has five sub-themes: Democratic Society (Overriding principle of governance); Violation of Rights & Violence (issues that threaten principles); Political Structures (The structures of government developed to uphold principles – this includes problems with these structures); Political Responses (government responses to issues/topics of priority); Regional Issues (Governments response to issues beyond the borders of Namibia).

Our experience of living in a Southern African country and our understanding of the issues that these countries have to face, influenced our approach to themes – themes needed to address current imbalances/issues. Another way of wording it would be, themes focus on influences in Namibian life that are not functioning sustainable because of historical or environmental reasons. This approach tends towards a more critical approach where there is a strong perception of a need for action and change in order to reach this goal of sustainability.

A reflection on how to emphasis interconnectedness?

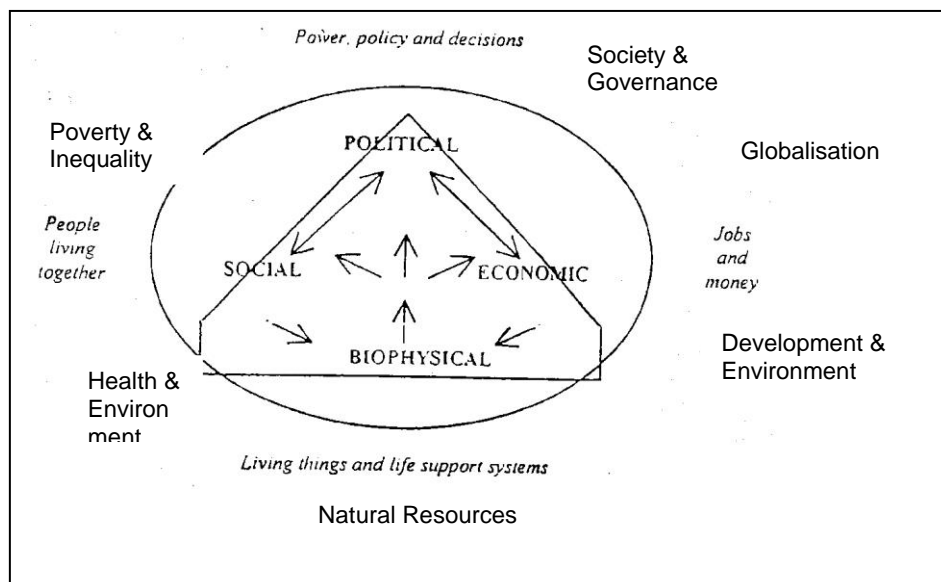
The biggest dilemma I faced in developing themes is that the themes will go the same way as subjects and become individual and separate focus areas. And yet it is mentioned over and over again that it is the understanding of the interrelated nature or connections between themes, concepts, issues that is the learning that needs to take place in EE. How does one develop themes without moving away from this understanding?

As soon as one begins to divide things into smaller and smaller bits (themes, then concepts, then aspects of concepts, then knowledge, skills and values within concepts) one tends to move further and further away from this connection (See Capra for an understanding of how this has become a world trend, ???). This is an underlying problem that is unavoidable as long as education structures remain as they are – within a separate building (the laboratory), free from outside influences (except those that the children bring with them), within a particular timeframe around particular knowledge systems (subjects, learning areas). So curriculum designers' energy is spent fitting, squeezing, shaping large tracts of understanding and experience into little bits to be shoved into the school system – a little bit there, a small space for more there etc. In an ideal world, EE could be taught within or for (the) environment (although 'for' still emphasises the separateness between me and my education for it, the environment) as a process of addressing life rather than learning about life through another constructed structure of life – the school system. It seems the real challenge for educators is not what is in the curriculum but rather how it is implemented.

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To summarise:

- The themes identified are largely developed from issues of sustainability faced by Namibian people. EE in general is guided by an issue-based approach as it tends to be seen as a 'response' to the issue of an environmental crisis.
- The themes are also influenced by the approach to EE that emphasises that issues are not just 'natural' but economic, political and social (Murray, ?). Themes tend to address a particular perspective, for example 'Society and Governance' looks at issues from a political perspective. Within themes there has been an attempt to integrate the biophysical, economic, political and social. Themes are not exclusively social or political although there is a dominant perspective.
- As in the diagram (See below) the themes have been developed to work together and complement each other. Issues/topics are often cross-referenced between themes, for example, management of natural resources is covered in Society and Governance (political), Natural Resources (biophysical), Development and Environment (economic) and Globalisation (economic and political).



Themes placed according to predominant perspective on environmental issues although all themes include all perspectives.

- Summaries of issues/topics of priority for Namibia are (WSSD, ? Danced, ?) listed for each theme. Issues that are addressed by the theme are marked with a tick. Sub-issues within issues have also been listed. If these can be addressed by the theme, the sub-issue is marked with a star (*). Please note, these are not issues that appear within the curriculum. These are issues that have informed the development of the theme and incorporated within the theme.

The Themes

Theme 1: Natural Resources

Focus: Resource use and interdependence. It deals with:

- human interactions with these systems;
- use of these systems, interconnectedness with;
- impact on systems;
- responses to our impact on these systems.

ADDRESSING TOPICS/ISSUES OF PRIORITY

Dependence on Natural Resources

- Pressure & Reliance on renewable natural Resources *
- Ensuring quality & quantity of resource*
- Need for Economic & Industrial diversification
- Pollution Prevention*
- Economic growth that is most conducive to ecologically and socially sustainable development

Poverty & Inequality

- Pressure on natural resources
- Gender inequalities
- Resource intensive lifestyles
- Gap between rich & poor
- Unequal access to resources

Water

- Water Scarcity vs Rising demand*
- Impact of inefficient crop irrigation*
- Re- evaluate management of resource*
- Inequality in use & access to water

Health

- Inadequate and unequal health care
- HIV/AIDS
- Preventative health care

Economic environment

- Need for stable macro environment
- Underdeveloped private sector
- Exploitation of natural resources*
- High dependence vs low productivity

Regionally & Globally shared natural resources

- cooperative approaches to management*
- Global warming & Climate Change

Land Issues

- Unsustainable land use.*
- Unequal access to land
- Land Tenure Reform
- Need for a harmonisation of policy and Implementation at government level.*
- Desertification*
- Prevention of Erosion*

Biodiversity

- Loss of diversity and genetic erosion*
- Linked to inappropriate economic practice
- Re-evaluate biodiversity conservation*
- 8. Equal access to genetic resources & Commercialisation of natural products

Population Growth & Settlement Patterns

- Population growth/distribution vs resource base
- Link between population growth and standard of living
- Waste*

Human Resources

- Limited human resources
- Lack of education
- Inequality
- Effects of HIV/AIDS

Governance

- Importance of decentralising resource management*
- Need for stronger partnerships with civil society
- Human Rights & Democracy
- Conflict, Crime & Violence

Knowledge for sustainable development

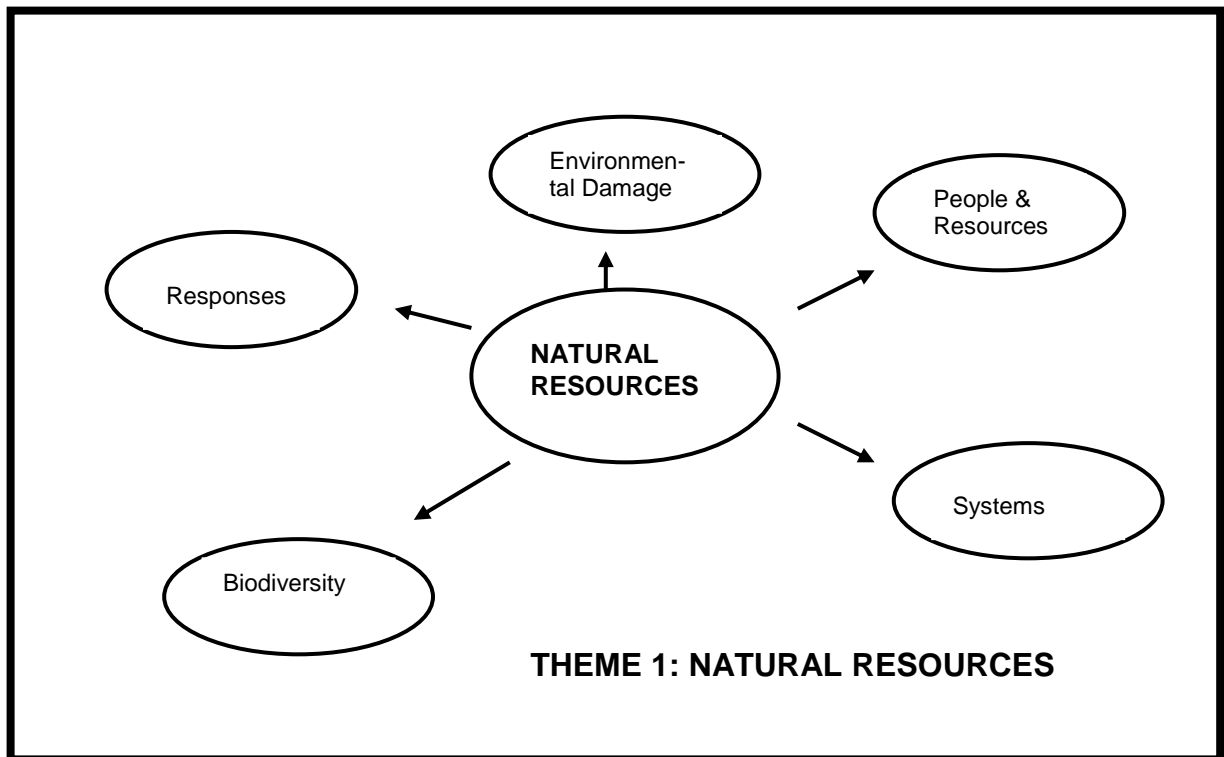
- Access to knowledge (including indigenous)
- Need to promote ICTs (computer-based

Handout 3.2

Culture & Lifestyle

- Need for cohesive, if culturally diverse society
- Develop shared economic and environmental interests (btwn rich & poor)*
- Shared vision of sustainable development (common attitudes & values regarding equity & environment)*

- information and communication technologies)
- Strong research policy
- Appropriate monitoring



Handout 3.2

Theme 2: Poverty and Inequality

Focus: It is in response to a history of colonialism, apartheid and present day post-colonial dominance. It deals with:

- systems that perpetuate poverty and inequality;
- issues that relate to this state;
- responses to poverty and inequality;
- developing personal values and attitudes (tolerance).

ADDRESSNG TOPICS/ISSUES OF PRIORITY

Dependence on Natural Resources

- Pressure & Reliance on renewable natural Resources *
- Ensuring quality & quantity of resource
- Need for Economic & Industrial diversification
- Pollution Prevention
- Economic growth that is most conducive to ecologically and socially sustainable development



Poverty & Inequality

- Pressure on natural resources*
- Gender inequalities*
- Resource intensive lifestyles*
- Gap between rich & poor*
- Unequal access to resources*



Water

- Water Scarcity vs Rising demand
- Impact of inefficient crop irrigation
- Re- evaluate management of resource
- Inequality in use & access to water*



Health

- Inadequate and unequal health care*
- HIV/AIDS
- Preventative health care

Economic environment

- Need for stable macro environment
- Underdeveloped private sector
- Exploitation of natural resources
- High dependence vs low productivity



Regionally & Globally shared natural resources

- cooperative approaches to management
- Global warming & Climate Change

Culture & Lifestyle

- Need for cohesive, if culturally diverse society*
- Develop shared economic and environmental interests (btwn rich & poor)*



- Shared vision of sustainable

Land Issues

- Unsustainable land use.
- Unequal access to land*
- Land Tenure Reform*
- Need for a harmonisation of policy and Implementation at government level
- Desertification
- Prevention of Erosion



Biodiversity

- Loss of diversity and genetic erosion
- Linked to inappropriate economic practice
- Re-evaluate biodiversity conservation
- 9. Equal access to genetic resources & Commercialisation of natural products



Population Growth & Settlement Patterns

- Population growth/distribution vs resource base
- Link between population growth and standard of living*
- Waste



Human Resources

- Limited human resources
- Lack of education*
- Inequality*
- Effects of HIV/AIDS



Governance

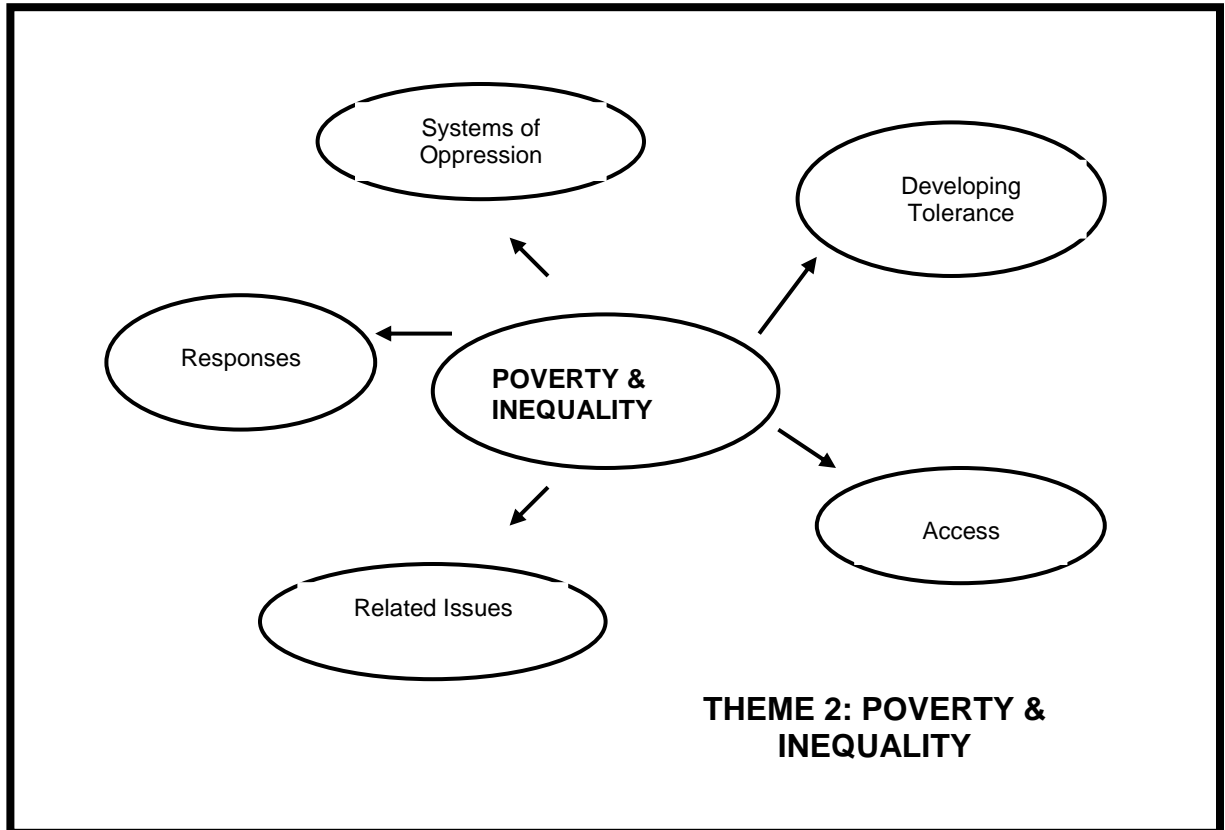
- Importance of decentralising resource management
- Need for stronger partnerships with civil society
- Human Rights & Democracy*
- Conflict, Crime & Violence*



Knowledge for sustainable development

- Access to knowledge (including indigenous)*
- Need to promote ICTs (computer-based information and communication technologies)
- Strong research policy
- Appropriate monitoring

Handout 3.2
development (common attitudes &
values regarding equity & environment)*



Handout 3.2

Theme 4: Development and Environment

Focus : This theme looks at economic environment and influences on resource use. It deals with:

- the line between economic activity and sustainability;
- resources as providing products and services for human activity;
- related issues such as population dynamics and waste;
- the term development as a response and issue.

ADDRESSING TOPICS/ISSUES OF PRIORITY

Dependence on Natural Resources

- Pressure & Reliance on renewable natural Resources ✓
- Ensuring quality & quantity of resource
- Need for Economic & Industrial diversification*
- Pollution Prevention*
- Economic growth that is most conducive to ecologically and socially sustainable development* ✓

Poverty & Inequality

- Pressure on natural resources
- Gender inequalities
- Resource intensive lifestyles*
- Gap between rich & poor*
- Unequal access to resources ✓

Water

- Water Scarcity vs Rising demand
- Impact of inefficient crop irrigation*
- Re- evaluate management of resource
- Inequality in use & access to water ✓

Health

- Inadequate and unequal health care ✓
- HIV/AIDS
- Preventative health care

Economic environment

- Need for stable macro environment*
- Underdeveloped private sector*
- Exploitation of natural resources
- High dependence vs low productivity ✓

Regionally & Globally shared natural resources

- cooperative approaches to management
- Global warming & Climate Change

Culture & Lifestyle

- Need for cohesive, if culturally diverse society
- Develop shared economic and environmental interests (btwn rich & poor)*
- Shared vision of sustainable development (common attitudes & values regarding equity & environment)

Land Issues

- Unsustainable land use.
- Unequal access to land
- Land Tenure Reform
- Need for a harmonisation of policy and Implementation at government level.
- Desertification
- Prevention of Erosion

Biodiversity

- Loss of diversity and genetic erosion ✓
- Linked to inappropriate economic practice*
- Re-evaluate biodiversity conservation
- 10. Equal access to genetic resources & Commercialisation of natural products* ✓

Population Growth & Settlement Patterns

- Population growth/distribution vs resource base* ✓
- Link between population growth and standard of living*
- Waste*

Human Resources

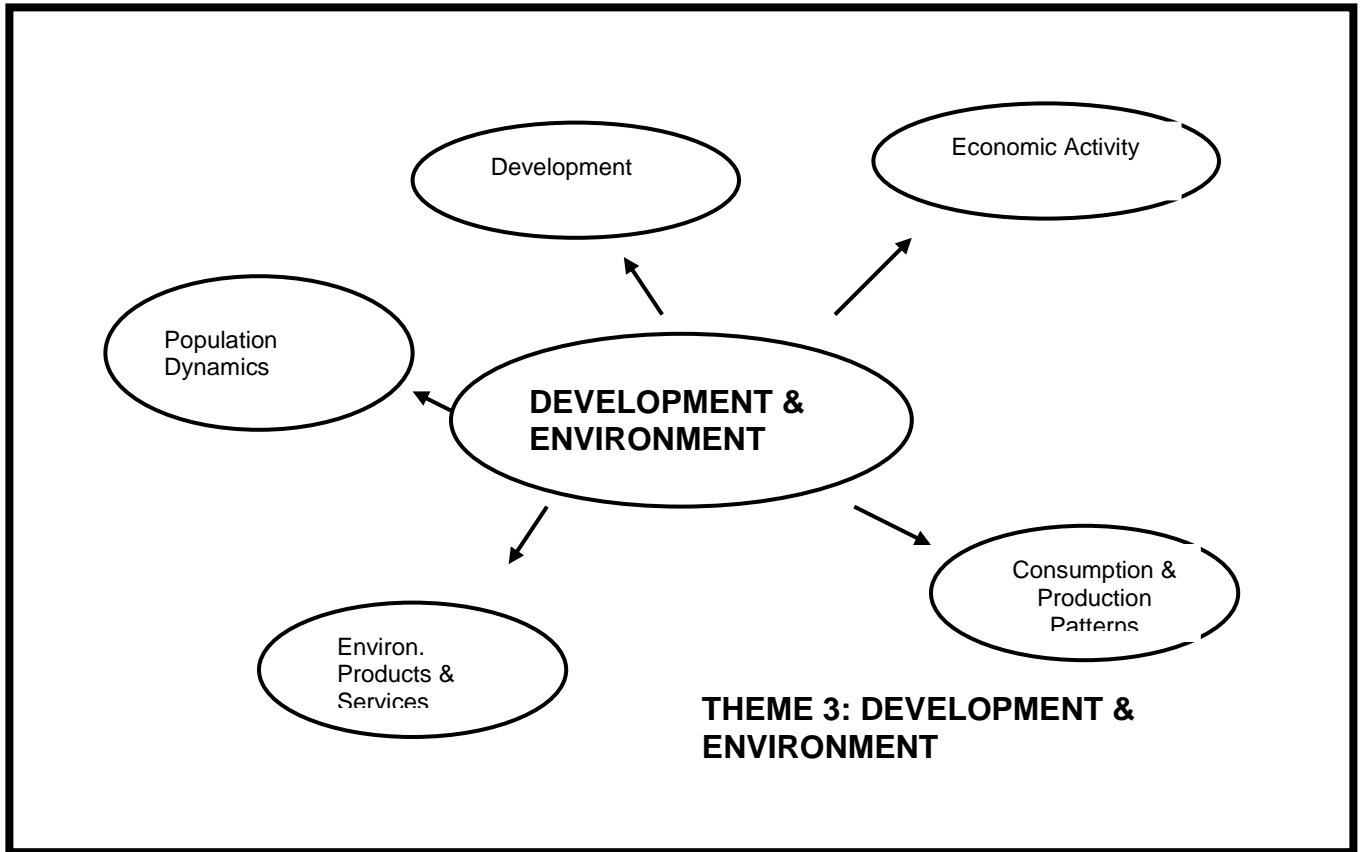
- Limited human resources*
- Lack of education
- Inequality
- Effects of HIV/AIDS

Governance

- Importance of decentralising resource management
- Need for stronger partnerships with civil society
- Human Rights & Democracy
- Conflict, Crime & Violence

Knowledge for sustainable development

- Access to knowledge (including indigenous)
- Need to promote ICTs (computer-based information and communication technologies)
- Strong research policy
- Appropriate monitoring



Handout 3.2

Theme 3: Society and Governance

Focus: This theme looks at political systems and responses to environmental issues.

It deals with:

- Democracy;
- political structures;
- political responses;
- issues such as corruption, violence and violated rights.

ADDRESSING TOPICS/ISSUES OF PRIORITY

Dependence on Natural Resources

- Pressure & Reliance on renewable natural Resources
- Ensuring quality & quantity of resource
- Need for Economic & Industrial diversification
- Pollution Prevention
- Economic growth that is most conducive to ecologically and socially sustainable development



Poverty & Inequality

- Pressure on natural resources
- Gender inequalities*
- Resource intensive lifestyles
- Gap between rich & poor*
- Unequal access to resources*



Water

- Water Scarcity vs Rising demand
- Impact of inefficient crop irrigation
- Re- evaluate management of resource*
- Inequality in use & access to water



Health

- Inadequate and unequal health care
- HIV/AIDS
- Preventative health care*

Economic environment

- Need for stable macro environment
- Underdeveloped private sector
- Exploitation of natural resources
- High dependence vs low productivity



Regionally & Globally shared natural resources

- cooperative approaches to management*
- Global warming & Climate Change



Culture & Lifestyle

- Need for cohesive, if culturally diverse society*
- Develop shared economic and environmental interests (btwn rich & poor)
- Shared vision of sustainable development

Land Issues

- Unsustainable land use.
- Unequal access to land
- Land Tenure Reform*
- Need for a harmonisation of policy and Implementation at government level.*
- Desertification
- Prevention of Erosion



Biodiversity

- Loss of diversity and genetic erosion
- Linked to inappropriate economic practice
- Re-evaluate biodiversity conservation
- 11. Equal access to genetic resources & Commercialisation of natural products

Population Growth & Settlement Patterns

- Population growth/distribution vs resource base
- Link between population growth and standard of living
- Waste

Human Resources

- Limited human resources
- Lack of education
- Inequality
- Effects of HIV/AIDS



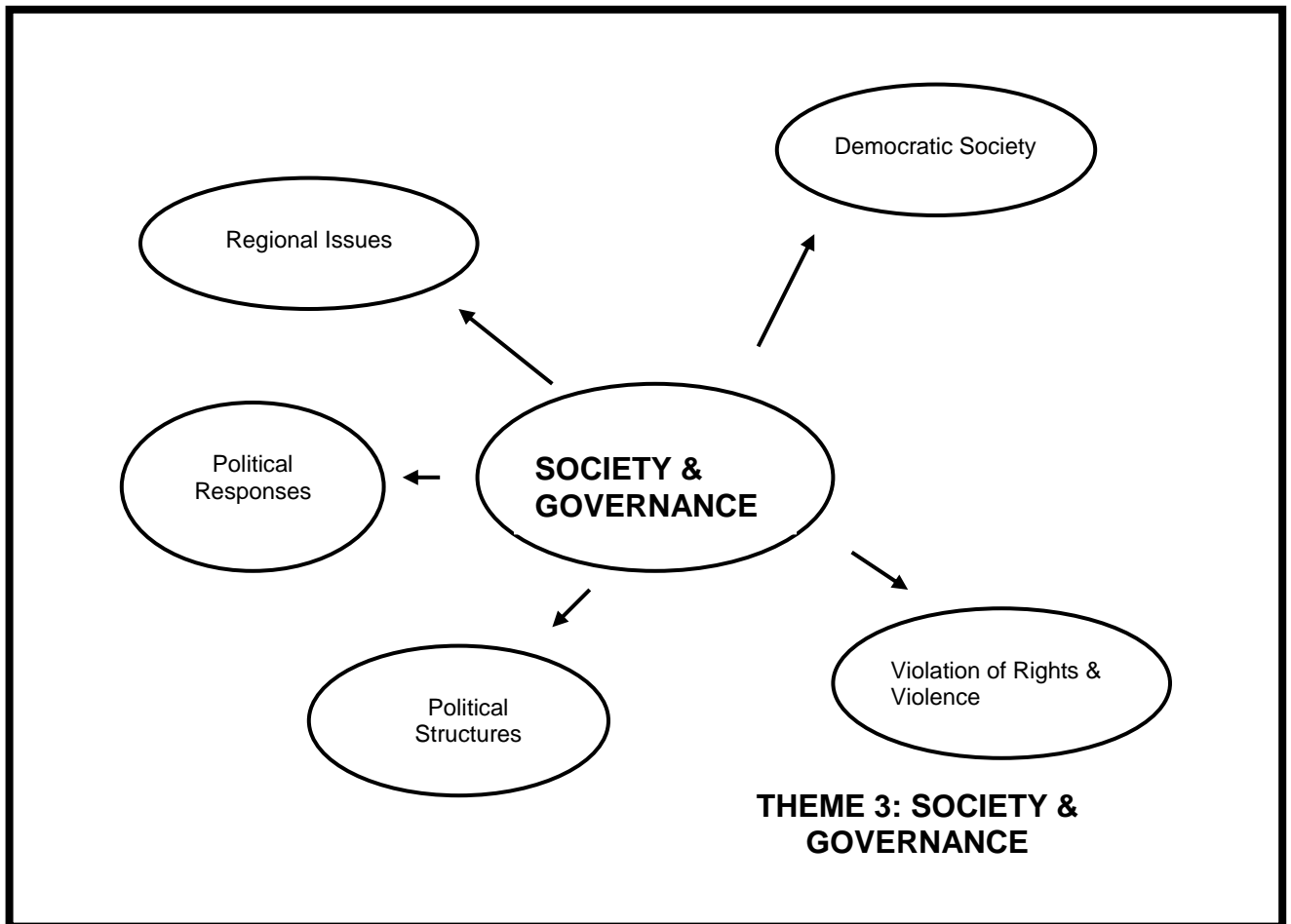
Governance

- Importance of decentralising resource management*
- Need for stronger partnerships with civil society*
- Human Rights & Democracy*
- Conflict, Crime & Violence*



Knowledge for sustainable development

- Access to knowledge (including indigenous)
- Need to promote ICTs (computer-based information and communication technologies)
- Strong research policy*
- Appropriate monitoring*



Handout 3.2

Theme 5: Health and Environment

Focus: This theme focuses on the direct link between our health and the health of the environment. It deals with:

- what makes us healthy;
- disease;
- issues of health, particularly social issues;
- responses to illness such as health services and prevention;
- HIV/AIDS is given a strong focus because of the seriousness of this issue in the region.

ADDRESSING TOPICS/ISSUES OF PRIORITY

Dependence on Natural Resources

- Pressure & Reliance on renewable natural Resources ✓
- Ensuring quality & quantity of resource*
- Need for Economic & Industrial diversification
- Pollution Prevention
- Economic growth that is most conducive to ecologically and socially sustainable development

Poverty & Inequality

- Pressure on natural resources
- Gender inequalities
- Resource intensive lifestyles
- Gap between rich & poor
- Unequal access to resources

Water

- Water Scarcity vs Rising demand
- Impact of inefficient crop irrigation ✓
- Re- evaluate management of resource
- Inequality in use & access to water

Health

- Inadequate and unequal health care*
- HIV/AIDS*
- Preventative health care*

Economic environment

- Need for stable macro environment
- Underdeveloped private sector
- Exploitation of natural resources
- High dependence vs low productivity

Regionally & Globally shared natural resources

- cooperative approaches to management
- Global warming & Climate Change

Culture & Lifestyle

- Need for cohesive, if culturally diverse society
- Develop shared economic and environmental interests (btwn rich & poor)
- Shared vision of sustainable

Land Issues

- Unsustainable land use.
- Unequal access to land
- Land Tenure Reform
- Need for a harmonisation of policy and Implementation at government level.
- Desertification
- Prevention of Erosion

Biodiversity

- Loss of diversity and genetic erosion
- Linked to inappropriate economic practice
- Re-evaluate biodiversity conservation
- 12. Equal access to genetic resources & Commercialisation of natural products

Population Growth & Settlement Patterns

- Population growth/distribution vs resource base
- Link between population growth and standard of living ✓
- Waste

Human Resources

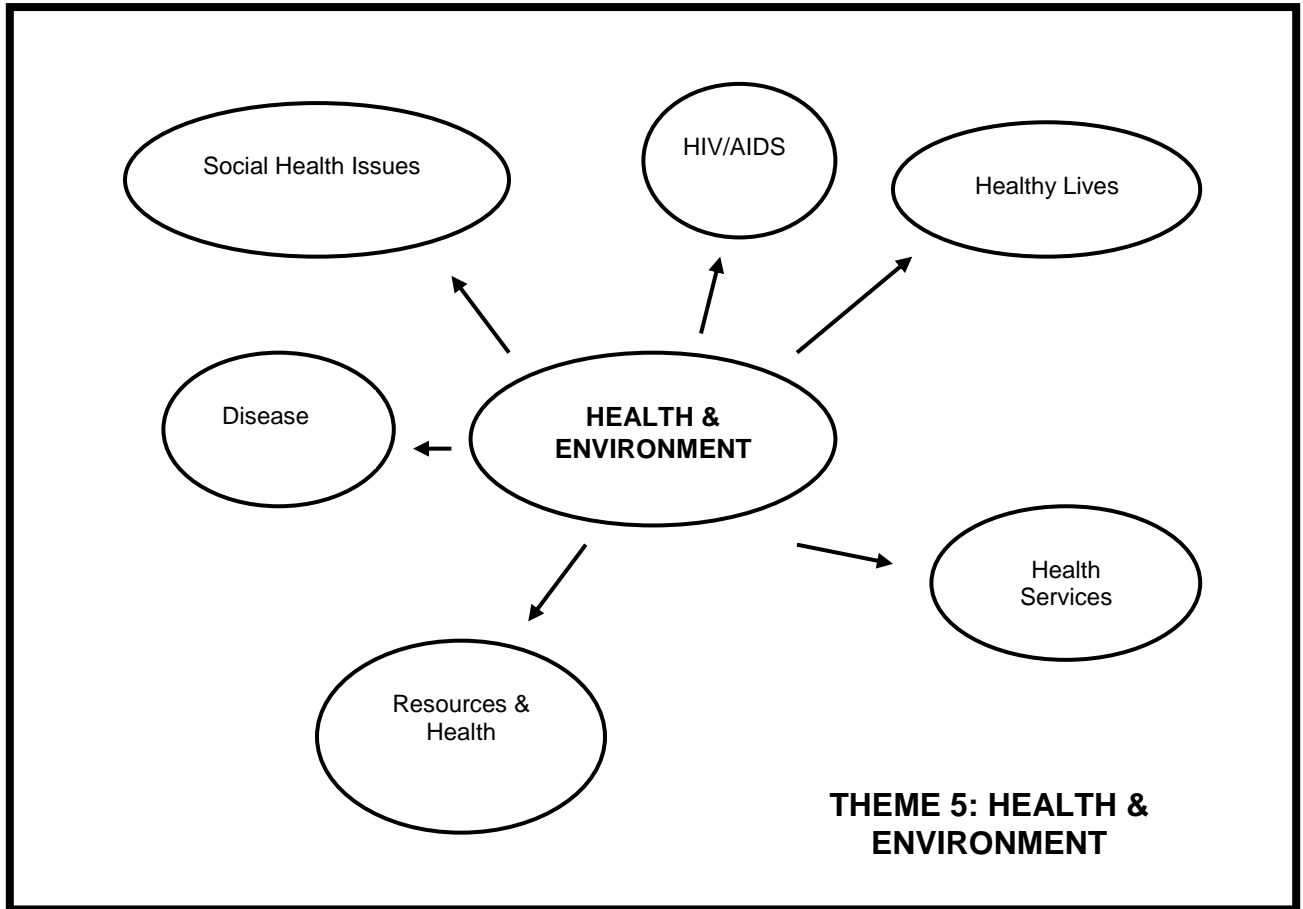
- Limited human resources ✓
- Lack of education*
- Inequality
- Effects of HIV/AIDS*

Governance

- Importance of decentralising resource management
- Need for stronger partnerships with civil society
- Human Rights & Democracy
- Conflict, Crime & Violence*

Knowledge for sustainable development

- Access to knowledge (including indigenous)
- Need to promote ICTs (computer-based information and communication technologies)
- Strong research policy
- Appropriate monitoring



Handout 3.2

Theme 6: Globalisation

Focus: This theme has been included as a global perspective, or global pressure influences most approaches to environmental issues. Globalisation can also be viewed as an environmental issue in itself, which has a huge impact on so called developing countries. It deals with:

- global issues and responses, including conflict;
- ideologies that support globalisation;
- global communities that have developed as a result of these ideologies;
- change in consumption and production patterns at an ever-growing global level.

ADDRESSING TOPICS/ISSUES OF PRIORITY

Dependence on Natural Resources

- Pressure & Reliance on renewable natural Resources
- Ensuring quality & quantity of resource
- Need for Economic & Industrial diversification
- Pollution Prevention
- Economic growth that is most conducive to ecologically and socially sustainable development

✓

Poverty & Inequality

- Pressure on natural resources
- Gender inequalities
- Resource intensive lifestyles *
- Gap between rich & poor
- Unequal access to resources

Water

- Water Scarcity vs Rising demand
- Impact of inefficient crop irrigation
- Re- evaluate management of resource
- Inequality in use & access to water

Health

- Inadequate and unequal health care
- HIV/AIDS
- Preventative health care

Economic environment

- Need for stable macro environment
- Underdeveloped private sector
- Exploitation of natural resources
- High dependence vs low productivity

✓

Regionally & Globally shared natural resources

- cooperative approaches to management*
- Global warming & Climate Change*

Culture & Lifestyle

- Need for cohesive, if culturally diverse society
- Develop shared economic and environmental interests (btwn rich & poor)
- Shared vision of sustainable development (common attitudes & values regarding equity & environment)

Land Issues

- Unsustainable land use.
- Unequal access to land
- Land Tenure Reform
- Need for a harmonisation of policy and Implementation at government level.
- Desertification
- Prevention of Erosion

Biodiversity

- Loss of diversity and genetic erosion*
- Linked to inappropriate economic practice
- Re-evaluate biodiversity conservation
- 13. Equal access to genetic resources & Commercialisation of natural products

✓

✓

Population Growth & Settlement Patterns

- Population growth/distribution vs resource base*
- Link between population growth and standard of living
- Waste

Human Resources

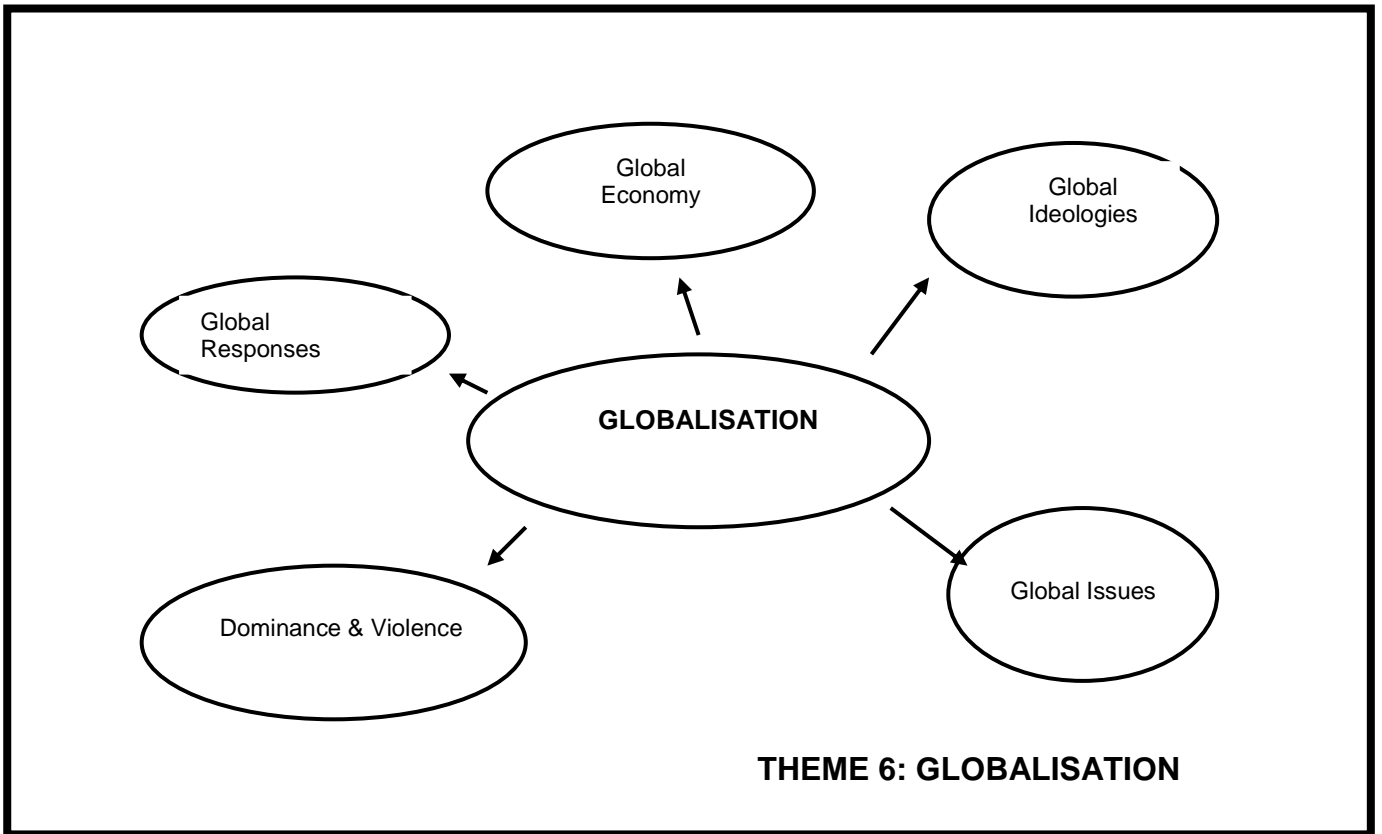
- Limited human resources
- Lack of education
- Inequality
- Effects of HIV/AIDS

Governance

- Importance of decentralising resource management
- Need for stronger partnerships with civil society
- Human Rights & Democracy
- Conflict, Crime & Violence

Knowledge for sustainable development

- Access to knowledge (including indigenous)
- Need to promote ICTs (computer-based information and communication technologies)
- Strong research policy
- Appropriate monitoring



WHAT IS IN THE CURRICULUM? WHERE IS IT LOCATED?

The Brief:

The terms of reference state that an audit of the curriculum should be done according to the identified themes. This audit should provide a conceptual map detailing the scope, scale and progression of key environmental concepts between subjects at different phase levels, in order to show progression from grades 1-12 within the seven broad Namibian learning areas.

Process

The following is the process of auditing the curriculum according to the six identified themes:

- All curricula were colour coded according to the six identified themes;
- At first, coding was very detailed. Anything that had a slight reference to a particular theme was coded;
- During the second run through, an attempt was made to capture the data as follows :
 - A) Map progression of knowledge & understanding, skills and competencies, attitudes and values, environmental concepts;
 - B) Map the above according to each learning area;
 - C) Map progression throughout each learning area according to each theme;
 - D) Map themes across curricula;
 - E) Map links between themes and thematic content and concepts.
- A detailed table for Grades 1, 2, and 3 (which were to be based on concepts identified in *'Developing a Curriculum Framework for Namibian Environmental Education (Murray, ?)'* as well as the *Desktop Audit of Environmental Education (Enviroteach, 2000)*) was done by the time of the progress report submitted on the 11 November 2002. There was a strong attempt to look for ways of moving beyond a content-based approach to the curricula.
- A meeting with Ursula van Harmelen reclarified the terms of reference. It was decided that the scope of the study was too huge for the timeframe. It was suggested that the focus be mapping what exists in the curriculum according to the different themes. Ursula emphasised that it was important for curriculum developers to know **what** they could find in the curricula, **where** they could find it, and whether themes **progress** through the curriculum. By mapping what is in the curriculum, trends, gaps and possible concepts would begin to surface. It was also agreed that unless directly related to the theme, the detail needed to look for gaps and identify environmental concepts between subjects at different phase levels would possibly become a further study.
- A third run through the curricula identified how each colour addressed a particular sub-theme of the six main themes. Unnecessary detail was disregarded.
- Again an attempt was made to map, in table form **what** was present in the curricula. This took an extraordinarily long time. This detailed mapping has been completed for the theme Natural Resources but it was decided that further mapping of the other five themes would be done only if reviewers felt that such a map would be useful. The table is the start of potentially mapping environmental concepts throughout the curriculum. Before it is taken further, it is felt that it needs to be reconceptualised according to:
 - Whether the overall themes are appropriate?
 - What environmental concepts should be covered within each theme?
 - A fourth run through the curricula mapped **where** themes and sub themes could be found within the curriculum (See below).
 - A fifth run through identified **what** was being taught in the curriculum around the six themes identified. This has been an attempt to identify broad topics/issues covered in the curriculum that cover content, concepts, attitudes and values and skills.. These were mapped as spider diagrams discussed below.
 - A second meeting with Ursula clarified the way forward. It was decided to pursue the tables identifying what is in the curriculum until after the submission of the working document. Comments on the second

Handout 3.2

- report were given. Mapping progression through the curriculum was also put on hold (besides making comments on patterns from the mapping) particularly in the light of Alistair McMaster's research.
- A final run through was done because of an emerging trend in the mapping. Different themes tended to be covered within particular learning areas and in particular subjects. This was clarified.

What Is In The Curriculum?

The spider diagrams below represent topics that relate to a particular theme. In brackets next to each topic one can find the year of learning where this topic occurs. When I began mapping the curriculum, I was hoping to be able to map concepts that occur under each sub-theme but abandoned this approach when it became apparent that there was hardly any progression around particular topics/issues. A topic or concept may be carried across two years but after that it is replaced by another aspect of the theme. This occurred even within subjects. In the early years there tended to be similar themes in similar subjects but these did not necessarily progress. The haphazard occurrence of these themes in the curriculum made me abandon trying to categorise what was there into concepts.

Grouping the material into topics was also difficult as curriculum material varies so much. Topics that tend to have a strong emphasis in curriculum material have been mapped. Other smaller topics have been left out. This information can be included in the more detailed tables if necessary (example of table see pg 47). Topics are grouped according to themes, concepts, values or skills but just as a representation of what is there so curriculum developers can get an idea of what they can work with and where the major gaps are.

Please note: Just because a topic is mentioned does not mean that it is covered in any great depth. Often issues/topics are mentioned in passing. Topics have been mapped to highlight areas where they are found but more commonly to highlight areas where they can be developed further.

Reflection:

- A suggested way forward to developing concepts would be to finalise the themes then look at concepts that should guide the themes. Once this has been done, Curriculum developers can return to these diagrams to see identify where concepts or themes can be developed.

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Theme 1: Natural Resources

Sub – theme 1: People & Resources

This sub-theme addresses people’s interaction and awareness of environment and particularly our use of resources. It is the relationship between people and the resource use. It was envisaged that this sub-theme could carry the concepts of natural resource use such as ‘interdependence’. In the curriculum the following topics are covered:

- Awareness of environment
- Appreciation of environment
- Interdependence
- Effects
- Indigenous knowledge relating to resource use

Sub – theme 2: Systems

This sub-theme addresses knowledge of the environmental systems that we are dependent on. It has been split up into Physical systems and Biological systems. This is one sub-theme that will probably not have that many gaps. The gap is in relating information about systems to human use of the system. This sub-theme is covered more than any other sub-theme in the curriculum. Weather is the most covered topic under Physical Systems. All aspects of weather are looked at, from learning to read a weather chart in Grade one to understanding the effects of weather on human activity and visa versa in the later standards. Water is also covered extensively but not exclusively as a system but more within sub-themes of ‘resource use’ and ‘resource damage’. Topics that are covered in the curriculum are:

- Physical systems
 - Soil/Land
 - Water
 - Energy
 - Air
 - Physical features
 - Weather
- Biological Systems
 - Animals
 - Plants
 - Ecosystems
- Natural Resources (General)

Sub-theme 3: Resource use

This sub-theme was to highlight the way in which we use resources. Although it seems as if there is a lot in the curricula, it is often part of a small section under information on systems and then not addressed with much detail. When mentioned it tends to not be too critical, as in ‘we use plants for food’ or in later grades ‘agriculture’. This sub-theme tends to be implicit rather than explicit. Topics found in the curriculum are:

- Industry
- Plants
- Food
- Water
- Resource use (general) (this category carries all the brief mentioning of resource use that occurs in the curriculum)

Handout 3.2

Sub-theme 4: Biodiversity

Biodiversity is a growing concern around resource use and resource management. It was felt that it influences all aspects of the theme 'Natural Resources' and is a topic and issue with enough importance to demand sub-theme status. It is also emphasised as a priority issue/topic for Namibia. Although this is so, it is not a well-covered sub-theme in the curricula. Topics covered in the curriculum are:

- Importance of indigenous species
- Loss of diversity
- Appreciation of diversity
- Protection

Sub-theme 5: Damage

This sub-theme refers to activities or actions that can damage natural resources. These are covered sufficiently in the curriculum, often as an add on to a section or a main topic in itself such as 'Population Dynamics.

- Natural Causes
- Damage
- Global Warming
- Waste
- Erosion
- Population
- Desertification
- Loss of Biodiversity
- Farming Practices
- Deforestation
- Pollution

Sub theme 6: Responses

This looks at human responses to resource use, and particularly to damage that has been done to systems through badly managed resource use. The topics in the curriculum are:

- Community Action
- Conservation
- Management
- Personal Care
- Alternative Technologies
- Farming methods
- Sustainability
- Political systems
- Education (this topic refers to material in the curriculum that asks learners to respond generally to how they would address environmental issues.)

Handout 3.2

Theme 2 Poverty & Inequality

Sub-theme 1: Tolerance

This sub theme expresses the values and attitudes that need to be developed in order to address the problems of poverty and inequality . This includes learning about diverse cultures so as to develop a tolerance for difference. Although there is a lot of emphasis in the curriculum on learning or experiencing other cultures it is not clear whether learners are asked to reflect on this as a way of developing tolerance. Topics covered in the curriculum are:

- Tolerance (General) (Exploring the concept of tolerance and why we should develop it)
- Working together for peace
- Respect for others
- Diverse cultures
- Fairness

Sub-theme 2: Access

One of the main issues surrounding poverty and inequality the fact that access to so many things is limited to just a few people whereas the majority have to fight for access. This seems to occur at all levels of society, from the North –South Gap to basic resource needs. This theme is explored in depth in the higher grades but is not addressed at all in the lower grades. Topics in the curriculum are:

- Natural Resources
- Access for Women
- Water
- Land
- Basic Needs

Sub-theme 3: Related Issues

This sub-theme's focus is to bring attention to all the issues that are influenced or influence poverty and inequality. Topics have only been extracted from the curriculum if they make a direct reference to a relationship with issues of poverty and inequality. On average this theme tends to be addressed within later grades of the curriculum. Topics present in the curriculum are:

- Resource Distribution (related to access)
- Wealth Distribution (also related to access)
- Urbanisation
- Population
- Health Issues
- Degradation
- Violence
- Gender inequality
- Loss of indigenous practice
- Sexual Abuse & Rape
- Food Security
- Unemployment

Sub-theme 4: Responses

How do we respond to issues of Poverty and Inequality? This is the focus of this sub-theme. Again responses are only mentioned if there was a direct reference to it being a response to poverty or/and inequality. Topics are present in a haphazard fashion depending on the curriculum material being taught. This means that responses are not looked at out of context but it also means that learners are presented with many different responses at a rather superficial level. Topics present in the curriculum are:

Handout 3.2

- Economic Reform
- Food Sufficiency
- African Movements
- Development & Alternatives
- International Pressure
- Religious Responses
- Socialism
- Human Rights Responses
- Education
- Women's responses
- Addressing gender roles

Sub-theme 5: Systems of Oppression

Poverty & Inequality is not only the result of a lack of tolerance. There are systems that perpetuate inequality or have, as a foundation, principles that do not support equality for all. This theme explores these systems. Generally, this is addressed historically in curriculum material. Present systems, besides the global economy and development (and these were only looked at very briefly) are not looked at for their potential to perpetuate inequality and poverty. Topics found in the curriculum are:

- Sexism
- Slavery
- Global Economy
- Colonialism & Neo-colonialism
- Foreign Rule
- Development
- Industrialisation
- Totalitarianism

Theme 3: Development & Environment

Sub theme 1: Economic Activity

Development is more often than not associated with ‘economic development’ particularly if it is spoken about in terms of a country's development. The first sub theme addresses this type of development by identifying at different economic activities and the relationship between these activities and resource use. In the curriculum material there is a lot about different economic activities but there is not often a connection made between these activities and resource use. This is often implicit rather than explicit. There is a lot of emphasis on how different activities can lead to economic development or the problems with different activities and economic development. The topics in the curriculum are:

- Industry based on resource use
- Damage by industry
- Patterns of employment/unemployment
- Resource use
- Economic Growth
- Business Systems
- Industrial/Technological Contributions

Sub theme 2: Consumption & Production Patterns

This sub-theme looks at different and changing consumption and production patterns, terms/concepts of consumption and production. Again relationship to resource use tends to be implicit rather than explicit.

Topics in the curriculum are:

- Concepts & Ideologies
- Changing Patterns
- Trade
- The Consumer
- Responding to Needs
- Different Approaches to Production
- Industrial Production

Sub theme 3: Waste

This is an issue which is directly related to a lot of human activities that have to do with economic activity (industry including farming) and city life (urbanisation). Surprising it wasn't dealt with in much detail. Although there is mention of particular activities causing waste, issues such as waste management and waste disposal were not covered in much depth. Recycling and Reuse were mentioned very briefly as a way of managing waste. The focus was more on waste being a problem/issue than solutions to the issue. The topics present in the curriculum are:

14. Waste Disposal
15. Waste management
16. Pollution
17. Littering

Sub theme 4: Environmental Products & Services

This sub-theme addresses the idea that the environment provides goods and services for human use. Ultimately any human production or service is related to the goods and services that are already present in the environment. For example, rivers transport and dilute waste. Again this theme is implicit rather than explicit within curriculum material. It depends on the way in which one reads the outcomes or objectives as to whether material falls under this theme or not. The more common way of wording material that fits into this theme is that the environment (either land, water) provides for agriculture/ energy etc. Topics present in the curriculum are:

Handout 3.2

- Land
- Water
- Energy
- Minerals
- Animals
- Plants
- Ocean/Fish

Sub theme 5: Population Dynamics

Another issues of people's development in the environment. This theme is covered thoroughly which is not surprising as the perception somewhere along the line is that the reason we have all these problems is because there are too many people. (I have some doubts about this. It assumes that if there were less people we could use the environment in any way we wanted to). Topics present in the curriculum are:

- Settlement Patterns
- Population Growth
- Impact on Economic Growth
- Issues of Overpopulation
- Population Characteristics
- Population Control

Theme 6: Development

Development is an issue as well as a response. It is a word that is often used in the context of the economic development of a country. It is also used to imply help or assistance from outside and within the country to those who 'need development' meaning those who are struggling to live within the present day economic activity. It is a contentious term. It is covered in the later grades of the curriculum. Topics present in the curriculum are:

- Addressing Conflict
- Colonialism & Development
- Aid
- Concept of Development
- Sustainable Development
- Patterns of Development
- Alternative Approaches
- Unequal Development

Handout 3.2

Theme 4: Society & Governance

Sub theme 1: Democratic Society

This sub theme deals with all aspects of democracy. It is based on the assumption that Namibia is aspiring towards a Democratic Society. It also assumes that a democratic system will more easily address environmental issues. Topics present in the curriculum are:

- Concepts of Democracy
- Morals & Values
- Voting
- Human rights
- Constitution
- Personal Responsibility
- Patriotism
- Women & Democracy
- Cultural tolerance
- Implementing Democracy

Sub theme 2: Violation of Human Rights & Violence

This is a direct threat to democracy and has adverse effect on the way humans use resources. This sub-theme is covered by historical curriculum material. There is not much emphasis on the violation of human rights that happens everyday in Southern Africa. Topics present in the curriculum are:

- Corruption
- Responses to Violence
- Crime
- Racism & Tribalism
- Rape & Sexual Abuse
- Fascism/Dictatorship

Sub theme 3: Political Structures & processes

This sub theme looks at the structures through which a country (Namibia) is governed and democracy implemented. Namibia is a new government. The structure of government and ideas of patriotism are looked at in the early grades. Namibia is also the focus of the earlier grades whereas in later grades the focus tends to be on abstract political systems and different forms of governance. Topics present in the curriculum are:

- National Symbols
- National Structure
- Leadership
- Policy on resource management
- Forms of governance
- Constitution
- African Political Movements
- Regional Governance
- Tradition governance

Sub theme 4: Political Responses

This sub theme looks at how governance responds to issues of resource use and the violation of human rights. Topics present in the curriculum are:

- Primary health Care
- Management of natural resources
- Public services

Handout 3.2

- Security/Responses to Violence
- Policy
- Women's Political Role
- Judicial/Constitutional Action

Sub theme 5: Regional Issues

As many resources are shared with the region, government has a huge role to play to make sure that this is done in a way that avoids conflict and is fair to all involved. The main topic covered by curriculum material is economic partnerships. There is little reference of why these economic partnerships are important for regional resource use. Again the connection is implicit rather than explicit. Topics present in the curriculum are:

- Regional Bodies
- Awareness of regional issues
- Economic issues
- Culture & Sports Exchange
- Assistance in crisis
- Regional Political structures

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Theme 5: Personal Health

Sub theme 1: Personal Health

This sub –theme is a response to individual health and care. It should cover issues/topics that each individual needs to consider in order to be healthy. Topics present in the curriculum are:

- Personal health & Safety
- Nutrition
- Social health
- Living conditions
- Sexual development

Sub theme 2: Health services & prevention

There are explicit places within the curriculum where this sub-theme can be expanded nicely and related back to other sub-themes and themes. Health as a theme is the most explicit theme in the curriculum after Natural Resources. Topics present in the curriculum are

- Social Services
- Awareness of health Service
- Safety measures
- Primary Health care (this topic is not well developed)
- Alternative Health Care
- Community involvement (this topic is only mentioned briefly, it has been included because the importance of community involvement in addressing health issues)
- First Aid

Sub-theme 3: Resources & Health

This sub – theme presence in the curriculum is not as clear as other sub-themes. It would be a good sub-theme to link with the sub-theme waste (Development & Environment) and Resource damage (Natural Resources). Topics have been extracted when there has been a direct mention of how resource use influences our health. Unfortunately there tends to only be negative references to how ‘damaged’ resource damage our health. Topics present in the curriculum are:

- Water Pollution
- Air Pollution
- Common Pollutants
- Changes in climate
- Chemicals
- Land use
- Water Pollution

Sub theme 4: Disease

This sub-theme incorporates all disease. Often the link of how this disease is related to resource use is explicit, in other cases , for example heart disease (and links to diet and nutrition) are implicit. Topics present in the curriculum are:

- Water-born diseases
- Heart disease
- Infectious disease
- Deficiency diseases
- Terminal illness
- Sexually transmitted diseases
- Malaria

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➤ TB

Sub-theme 5: HIV/AIDS

HIV/AIDS is a serious regional issue that effects all aspects of human life. Mention of HIV only begins in Grade 6.

- Awareness & Attitude
- Sexual Behaviour
- Transmission & Contraction
- Medical/Social/Economic Issues
- Statistics
- Prevention
- Development

Sub-theme 6: Social Health Issues

Topics in this sub –theme cover social issues that influence health patterns. Topics present in curriculum are:

- Unwanted Pregnancy
- Psychological issues
- Substance Abuse
- Industry
- HIV/AIDS
- Pregnancy Care
- Social living conditions

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Theme 6: Globalisation

Sub-theme 1: Global Economy

One of the strongest forces linking countries are trade agreements and economic activity. This can be both a negative and positive force with regards to resource use. Topics present in the curriculum are:

- Economic bodies
- North-South gap
- Trade & World market
- Exploitation of Resources
- Multi-nationals
- Economic bodies

Sub theme 2: Global Ideologies

This theme addresses ideologies that have influenced or effected most countries in the world in one way or another. These ideologies tend to add to Globalisation being considered an issue rather than a response. One global ideology that is blatantly missing from the topics is 'democracy'. Although there is a lot in the curriculum on democracy it is not mentioned in the context of a global idea or influence. Topics present in the curriculum are:

- Colonialism
- International Economy
- Capitalism
- Christian Missionaries
- Development
- Dominant knowledge systems

Sub theme 3: Global Issues

This sub theme recognises the global challenges of environmental issues. This sub-theme was included to show that issues of resource use influence more than a country, they have a lasting impact for the whole world. Topics have only been extracted if an issue is addressed as a global concern. Often these topics are mentioned as an example. Topics in the curriculum are:

- Drug Trade
- Nuclear Waste
- Foreign Aid
- Women's rights
- Global warming/ozone layer (this is the most commonly mentioned global issue)
- Unequal distribution of resources
- Poverty
- Disease
- Biodiversity
- Exploitation of Resources
- Colonialism
- Human Rights
- Population Growth

Sub-theme 4: Dominance & Violence

Many environmental issues can be related directly to violence towards a country or dominance of a country(ies). War causes huge environmental problems (biophysical, social, political and economic). These links need to be recognised particularly within the current global context within which Southern African countries find themselves in. What role can 'developing' countries play in addressing global conflict. What understanding do these countries have of dominance from past history that can be shared with other

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countries? This sub theme is hardly addressed in the curriculum. It tends to be addressed within a historical context without much reference to the present situation. Topics present in the curriculum are:

- Ideological/cultural/religious dominance
- Colonialism
- Attempts to keep peace
- Occupation
- Economic Dominance

Sub theme 6: Global Responses

This sub theme looks at what kind of responses can occur at a global level with regards to environmental issues. Again, this is mostly present in the curriculum from a historical perspective. Topics present in the curriculum are:

- Global Bodies
- Foreign aid
- Cultural Exchange
- Global Pressure
- Conferences
- Development
- World conservation

Reflection

Brief reflection on Topics

- Some topics are found in more than one sub-theme. Eg. **Water** can be found in 'Systems' and Resource Use'
- Biodiversity is hardly covered as a sub-theme.
- Topics also occur across themes. Eg. **Waste** can be found in the sub-theme 'Damage' as well as in the Theme 'Development and Environment' as the sub-theme 'Waste'

This means that different themes can look at particular aspects of an issue. It also provides an opportunity for an integrated approach to exploring environmental issues.

LOCATION OF THEMES IN THE CURRICULUM

Theme 1 : Natural Resources

This theme is probably the most consistently covered throughout the curriculum. This is not surprising as science, biology and geography-based subjects focus on knowledge of the 'natural world'. In the past this knowledge *about* the environment was the only aspect of EE. Certain learning areas 'carry' this theme more easily, for example Environmental studies (G1-3), Social Studies (G4-7); Natural Science and Health Ed (G-7), Agriculture (G5-HIGCSE); Life Sciences (G8-10), Physical Science (G8-10); Geography (G8-HIGCSE). These subjects are housed in the learning areas of Natural Scientific, Social and Economic (G1-4), Natural science (G5-10) and Social and Economic (G5-10). Any evidence of this theme that falls out of these learning areas tends to fall under the sub-concept of 'People and Resources' or 'Resource Responses' that represent the human agent in this theme. An obvious gap from this overview is that little attention is given to the sub-concept of 'biodiversity'. Considering the importance of this concept to both Namibia and the world, it is possibly a gap that needs to be filled. 'People and Resources' is a strong focus in the first phase of learning and becomes less important through the standards.

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Theme 2: Poverty and Inequality

Poverty and Inequality is found in the learning areas that focus on human interaction with the environment. These are 'Natural Scientific Social and Economic (G1-4), Spiritual and Ethical (G1-4), Natural Scientific (G5-9) and Spiritual & Ethical (G5-9). In IGCSE and HIGCSE the focus is again on subjects that look at social interactions within the environment (egs. Geography, Development Studies, Natural Economy). 'Developing Tolerance' is covered broadly in G1-4 in relation to the other concept areas. In G5-7 it is obvious that the strongest carrier subjects are Social Studies, Natural Science and Health. In G8-10 the main carrier subjects are History and Religious and Moral Education with Life Skills focusing on the sub-concepts that deal with human reaction or action. The H/IGCSE level carrier subjects are Natural Economy and Development Studies. Although one would assume that History would continue being a strong carrier subject this is not the case at this level. This may be because of a strong focus on 'knowledge' about history rather than exploring history in relation to issues of relevance such as oppression, human rights and violence.

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Theme 3: Development and Environment

Focus on this theme develops towards the end of the curriculum. Almost every subject deals with the economic activity by grade 8. The same learning areas as in the above three themes 'carry' this one, although there is not such a strong focus on physical science and more of a focus on subjects that have an economic or human production component. The strong developing focus on this theme is not surprising considering the emphasis of life on the 'human economic activity'. It should also be noted that this theme is often cross referenced with other themes particularly Natural Resources, Poverty and Inequality and Society and Governance- all of which are influenced by economic activity.

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Theme 4: Society and Governance

Again the carrier learning areas are Natural Scientific, Social Economic (G1-4), Spiritual Ethical (g1-4), Natural Scientific (G5-10) and Spiritual & Ethical (G5-10). In HIGCSE the carrier subjects are Development Studies, Geography and Business Studies. At the start of learning the sub-concept 'democratic society' is dealt with broadly across the curriculum, with political structures and political responses becoming the main broad focus towards the end of the curriculum. The broadest focus in the curriculum on Regional issues is between the grades 8-10. Suprisingly, violence and violation of rights is not dealt with at all at H/IGCSE level.

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Theme 5: Health and Environment

Besides the sub concept 'health services and protection' at G8-10, this theme is not covered broadly in the curriculum. The broad representation of this theme is because of the inclusion of the topic 'prevention (of harm & disease)', that is covered in most technical options. This theme tends to be found within one or two subjects, particularly within the early years of schooling where it is almost exclusively found within the subject of Environmental Studies. Again in G5-7 it is covered mostly by Natural Science and Health Education and in G8-10 by Life Skills and Life Science. HIV/AIDS is covered from G5-7, this may already be too late considering that most children will be eleven years of age and it has been documented that sexual activity can already have started by this stage. Also many children will know of people dying or suffering from HIV/AIDS, knowledge of and skills to deal with this impact on their lives cannot start too early!

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Theme 6: Globalisation

This theme is not covered in the first phase of schooling. This seems appropriate considering the need for this age group to focus on relationships within their local environment and situation first. This theme develops as learners grow older and start exploring beyond their local and regional environment. By Grade 9 the theme is well established. Surprisingly global conflict, which is one of the main causes of social and environmental upheaval, is not dealt with in any depth anywhere in the curriculum. It is only dealt with within the subject of history defining conflict as an event of the past rather than an ongoing problem in today's global society.

Reflection:

Themes tend to occur in particular subject and learning areas. For example, Natural Resources is usually found in the learning area Natural Scientific or Social Economic.

Carrier Subjects/Learning Areas

By looking at the location of themes in the curriculum, one can begin to see that certain themes tend to be 'carried' by particular learning areas and even particular subjects. For example, the theme Poverty and Inequality tends to be found in the learning area 'Social Economic' and in the subject 'History'. This trend should be encouraged. Trying to incorporate each theme within each learning area, within each subject will take an immense amount of energy as well as training. It can also be questioned whether it will be useful to the learner. Often this approach results in a superficial engagement with issues.

Carrier learning areas and even carrier subjects would also be useful in terms of identifying particular concepts, skills, values and attitudes that should be covered by Environmental Education. Take, for example some of the skills identified in the document '*Developing a curriculum framework for Namibian Environmental Education*'. In brackets I have suggested learning areas where these skills could be carried.

An example

- Express ideas and views about the environment (using different media) (Linguistics & literacy, Aesthetic)
- Argue clearly and concisely about environmental issues (Social Economic)
- Collect, classify, analyse and interpret data, especially statistics (Numeric & Natural Scientific)

The same can be done for Values and Attitudes. In brackets I have suggested possible learning areas where these values and attitudes could be carried.

An example

- A concern for the quality of the environment and a preparedness to actively care for it. (Natural Scientific)
- A sense of personal and social responsibility and a desire to work co-operatively with others on an environmental issue. (Social Economic)
- A respect for the beliefs of others (Social Economic, Spiritual & Ethical)

Below are two tables that map which map the dominant subjects and learning areas for each theme.

1. Table one maps dominant subjects
2. Table two maps the dominant learning area.

Process of mapping carrier subjects/learning areas

This has not been an extensive process. Subjects were analysed according to colour-codes. For example, Social studies had lots of yellow which is the colour for Natural Resources therefore it has been recorded as a carrier subject for Natural Resources. This does not necessarily say that Social Studies is a valid carrier subject as it may just cover the sub-theme of Systems and not any of the other sub-themes in the theme Natural Resources. The next step would be to compare these results with the results recorded in the 'Location diagrams'. For example, if one looks at the diagram on the Location of Natural Resources. Here we can see that Social Studies does appear regularly throughout all the sub-themes. The final step would be at **what** is taught within these sub-themes. It is suggested that this be considered for the next phase of this study once themes and sub-themes have been finalised.

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TABLE 1: MAPPING DOMINANT CARRIER SUBJECTS FOR EACH THEME.

	Grade 1-4		Grade 5-7			Grade 8-10			IGCSE/HIGCSE	
	Grade 1-3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10	IGCSE	HIGCSE
Natural Resources	Environmental Studies	Social Studies	Natural Science & Health Agriculture	Social Studies Agriculture	Social Studies Agriculture	Life Science Geography Agriculture	Life Science Geography	Life Science Geography Physical Science	Natural Economy Geography Agriculture Biology	Geography Chemistry Biology
Poverty & Inequality	Environmental Studies	Social Studies	Social Studies			History ➤ Religion ➤ Education Life Skills	History ➤ Religion ➤ Education Geography	History ➤ Religion ➤ Education Life Skills	History Natural Economics Development Studies Economics	History
Development & Environment	Environmental Studies	Social Studies	Social Studies			History Geography	History Geography	Geography	Geography Development Studies	Economic Geography
Society & Governance	Environmental Studies	Social Studies	Social Studies			No Carrier Subject	History Life Skills Geography	History Life Skills Religious Ed	Geography Development Studies Natural Economy Business Studies	Geography
Health & Environment	Environmental Studies	Social Studies	Social Studies	Natural Science & Health	Natural Science & Health Life Skills	Life Skills Home Ec	Life Skills Home Ec	Development Studies	Development Studies	Biology
Globalisation	NONE	NONE	NONE	Social Studies	No Carrier Subject	No Carrier Subject	History Geography	History Geography Life Science	Development Studies Economics	Geography Economics

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TABLE MAPPING DOMINANT LEARNING AREAS (G1-10) FOR EACH THEME

	GRADE 1-4	GRADE 5-7	GRADE 8-10
Natural Resources	Natural Scientific	Natural Scientific Social Economic Technological	Natural Scientific Social Economic Technological
Poverty & Inequality	Natural Scientific	Social Economic	Social Economic Spiritual & Ethical
Development & Environment	Natural Scientific	Social Economic	Social Economic
Society & Governance	Natural Scientific (Grade 3 – Spiritual & Ethical)	Social Economic	Social Economic
Health & Environment	Natural Scientific	Natural Scientific (G6, 7) Social Economic (G8)	Social Economic Technological
Globalisation	NONE	Social Economic	Social Economic

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IN DEPTH MAPPING OF CURRICULUM MATERIAL

This map was to be the final stage of this audit process. Themes were to be mapped according to topics found in the curriculum as mapped in the first set of diagrams across all grades. This was to be done in table form. This was an attempt to map progression, if any, for each theme. It was also an attempt to identify gaps, omissions and repetition in curriculum material. A draft of this map has been done for ‘Natural Resources’. It is possible for maps for each theme to be done but whether this will be useful is debatable. A suggestion would be to revisit this map of the curriculum once themes and concepts, skills, values and attitudes within themes have been finalised. A detailed analysis of the table below has not been completed.

THEME 1 NATURAL RESOURCES (ROUGH DRAFT)

grade	Concepts						Skills	Values & Attitudes
	<i>People and Resources</i>	Systems	Resource Use	Biodiversity	Responses	<i>Environmental Damage</i>		
1	Awareness Sensory awareness Materials and objects Imitation of animals Man made and natural features Appreciation Love and respect for self & environ. Interdependence Need for water	Animals Insects Wild vs domestic animals around home & school Around us Time of day (Arts) Plants Leaves Different types, different parts, food source, harmful, need for sun and water Weather Charts Comparisons Water Where, clean water, uses	Water Human needs, multiple purposes Plants Food	Appreciate diversity (Environ Studies)	Conservation (Environ Studies)	NONE	Observe, feel, converse on, make comparisons, awareness, describe, gather, interpret, record, appreciate, recognise, understand, explore, create, discuss	Love and respect for nature
2	Awareness Sensory Awareness Imitate sounds Environ materials and objects Immediate environ Imitate animals Appreciation Valuable resources Care Interdependence Clean water & food	Animals Types of insects Birds wild vs domestic Around us, diff times of day Plants Leaves, seed dispersal, seed = plant Weather Effect on people, plants & animals Water Diff sources	Water For health, storing water, purifying water Food For health	NONE	Care and respect Action Litter clean-up School environment Conservation Against extinction	Water Pollution	Converse, read, discuss, observe, become aware, recognise, investigate, develop skills, show behaviour, name, identify, initiate, create, discuss, act	Interdependence Care & respect

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3	<p>Awareness Immediate environ Sensory Awareness Imitate sounds Environ materials and objects <i>Imitate animals</i> Appreciation Care & respect for conservation Interdependence Importance Food (plants)</p>	<p>Animals Characteristics & products of wild & domestic animals Reptiles, fish, Birds Plants Types, uses, indigenous, growth, harmful</p>	<p>Plants Uses Animals Products Natural Resources (General) Local Industry Tourism Industry (local) Farmers (local) Craft</p>	NONE	<p><i>Sustainable use of resources</i> Conservation Resources, endangered animals Action Litter clearance</p>	Waste littering	Converse, write, identify, explain, discover, observe, acknowledge, investigate, discuss, aware, participate, list, name, identify, imitate, create, discuss, act	Care and Respect Interdependence
	<p>Appreciation Aesthetic (moods & colour) Interdependence Effect on natural landscape Movement of people Health & basic needs Existence</p>	<p>Animals Regional Plants Regional Weather Weather chart, observation Natural resources Regional Non renewable vs renewable Limited egs. from area</p>	<p>Resource use (general) Population distribution Basic needs Survival Industry Fishing & mining farming</p>	NONE	<p>Care Conservation Protection of wild plants & animals</p>	Regional, by people & weather	Explore, discover, list, participate, understand, describe, give examples, classify, develop, find out	Interconnectedness Reliance for needs Aesthetic value As protectors
5	<p>Awareness Land as precious Through information Appreciation Aesthetic (shapes & patterns) Wealth of marine resources Interdependence Water * Between animals, plants & humans Value of soil Sun IK Water use Sun Uses of plants</p>	<p>Mass Breakdown of materials Biodegradable vs non-biodegradable Water sources *(local), water cycle, States of matter: water Dry country, Soil/land Characteristics, types (local), layers 7 colours, plants & soil, organisms, soil components, humus Air Movement Pressure Sunlight</p>	<p>Resource use (general) Useful – plants (local), soil (farming, traditional products), animals (local), wildlife, land (precious, farming), marine resources Industry Stock farming (Namibia) Minerals/mining Agriculture: source of food Water Storage, importance, ways to purify</p>	Loss of plants	<p>Care (for pets) Education Keep water clean Conservation Water Conserving pasture (Farming) Action Filter, purify dirty water Composting</p>	<p>Damage Land, fish resources Pollution Effects Water Air Erosion* Local <i>Deforestation</i> Farming practices Overgrazing Loss of biodiversity Local plants Population resources</p>	Know, describe, demonstrate, name, evaluate, observe, identify, investigate, recognise, apply, understand, plan, determine, locate, explore, analyse, explore, realise	Interdependence on natural resources Aesthetic appreciation Value local knowledge

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		<p>Local, movement of earth, day & night, heat & light (living organisms, objects, behaviour), source of food for plants*</p> <p>Plants Types of local trees & plants, life cycle, dispersal of seeds, ways of dispersal, abiotic factors, needs (sun, nutrients)</p> <p>Animals Similarities & differences (local), uses, harmful, life cycle, care, dependence on plants</p> <p>Weather Rainfall & vegetation Physical features Namibia Non renewable vs renewable <i>Minerals</i></p>						
6	<p>Interdependence Food from plants</p>	<p>Water Evaporation, sufficient clean water Plants Need for <u>water</u>, how to (useful & wasteful) Plant food Need for <u>light</u> Food source, adaptation to dry environ, plant pests (Namibia) role of indigenous plants Cultivated vs wild plants Air Effect of wind Animals Variations, classify, life cycle of insects Relationship btwn animals and plants Feeding behaviour Weather & vegetation Diff btwn weather &</p>	<p>Resource use (general) Food Role of indigenous plants Industry Tourism: value of wild animals Energy Sun for cooking Other Colonialism (raw materials) Population (dependence on) Economic (influence)</p>	Importance of Indigenous plants	<p>Care (for pets) Education Conservation Relationship btwn plant conservation & soil erosion Action Recycling – everyday materials, NB, objects reused, recycled. Alternative technologies Solar power Prevention Soil erosion by wind & water Awareness Betwn useful & wasteful watering methods</p>	<p>Damage Pests Pollution Water pollution (scarcity clean water, contamination) Air Pollution (diff sources, effects) <u>Deforestation</u> Effects (regional) Land degradation Effects (regional) Erosion Population damage</p>	<p>Gather evidence, compare, recognise, give examples, analyse, explain, classify, Illustrate, find out, understand, discuss, distinguish</p>	Interdependence for food, for industry

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		<p>climate Diff natural regions (Africa) Climate & vegetation Physical features <i>Africa</i></p>						
7	<p>Interdependence/need on climatic influences human survival need for water Effects Natural disasters</p>	<p><i>Natural resources (Namibia)</i> Ecosystems Namibia Plants Structure & function (local environ) Animals Structure & function (local) Weather Local Understand weather forecast, charts Physical features <i>World</i> <i>Unique features of Namibia</i></p>	<p>Energy Use Transport Other Human activity</p>	<p>Protecting endangered species</p>	<p>Care (for pets) Education Conservation Protection (Namibia) Alternative technologies Energy Aid People & countries (natural disasters)</p>	<p>Damage Transport Wars <i>Deforestation</i> Vegetation damage Development Dams Technology Farming practices Crop farming (agricultural methods) Animal farming overgrazing Waste Water "Natural" vegetation damage - fires</p>	<p>Understand, name, locate, explain, identify, list, construct, describe, collect, interpret, compare, realise, plan, name, recognise, suggest</p>	<p>Dependence on environmental conditions survival</p>
8	<p>Awareness Human dependence Religious beliefs inspire care Appreciation Aesthetic (space and spatial relationships, environ as source of inspiration) Interdependence/needs Food production* (life sciences, Agriculture-focus on vegetables, fruit) Changing needs (tools) Managing water Energy (machines) Limited resources Effects/influences</p>	<p>Ecosystems Food chains & webs/decomposition/cycling matter/energy flow Plants gardening Harvesting, Respiration Sowing, production Photosynthesis Adaptation to dry climate Influence of extreme temperature Soil properties Plant structure, plant processes (See above repetition – agriculture, life sciences*) Reproduction Requirements for growth (some repetition earlier in C*) Cross section of tree,</p>	<p>WHOLE OF AGRICULTURE SYLLABUS Resource use (general) Inspiration Food production (local natural environment) Food production – gardening Changes in food prod (Historical) Needs & wants Hunting & Fishing Water Limited use Industry Farming (conservation, species of animals, poultry, Rabbit, Vegetable, Fruit) Woodwork - trees Energy Machines</p>	<p>NONE</p>	<p>Care Awareness, responsibility (environ) Farming methods <i>Conservation farming</i> Sustainability Crop production sustainable production Natural resources Sustainable development Education Urban issues</p>	<p><i>Depletion of resources</i> Farming practices Soil erosion</p>	<p>Recognise, know, list, mention, describe, explain, define, aware, state, identify, discuss, explain, demonstrate, discuss,</p>	

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	Climate (human activities) Settlement & movement (stone age, Koisan, Bantu, Damara)	diff types of timber Animals Life cycle of chicken Energy Sources of energy (Physical science geography*) Air Gases (oxygen, carbon dioxide) Weather Climatic regions (south of sahara) <i>(Basic Information Systems*)</i> Renewable vs non-renewable resources Definitions					
9	Appreciation Aesthetic (space and spacial relationships, environ as source of inspiration) Interdependence/needs Use of natural resources (historical) Growing Population (increase resource use) Society & environment Effects/influences War (1904-1909) Urbanisation (Africa)	Plants Soil & climate requirements for growth Cross section of tree, types (timber) Animals <i>in Namibia – adaption & responses to abiotic factors, biotic factors, nutrition, digestion, sexual reproduction</i> Weather Synoptic weather maps, precipitation, Climate in Namibia	WHOLE OF AGRICULTURE SYLLABUS Resource use (general/issues) Environ use in religions texts Population (namibia) Inspiration Colonialism – land allocation, german rule Water Agriculture Industry <u>Farming</u> – animal husbandry (school), animal farming (namibia), types, limiting factors, sustainable use (vegetation) Animal production, cash crops, grazing systems Commercial farming (south african rule) Woodwork Food provision Historical	Namibian environs (define, relationship btwn environ and biodiversity, diff environs) Loss & decrease in productivity	<i>Preservation</i> Sustainability Animal farming Sustainable management vegetation Education Deforestation (methods) Soil erosion (methods) Political systems Colonialism (land allocation) Resistance Management Animal husbandry	Soil Erosion Causes <u>Deforestation</u> Causes Loss of biodiversity Deforestation, bush encroachment, soil erosion	
10	Appreciation Aesthetic (space and spacial relationships,	(focus moved to human system) materials types, uses, structure	WHOLE OF AGRICULTURE SYLLABUS Resource use	NONE	<i>Plant production; Grass (Soil erosion), controlling bush encroachment</i>	Pollution Local and global environ Littering & water pollution (Namibia* life	

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	<p>environ as source of inspiration) Interdependence/needs Importance of Agriculture (country) Effects/influences Population density = efficient land use</p>	<p>& properties Plants Plant growth (environmental influences) Irrigation Tree growing (factors, from seed, indigenous trees, fire precautions) Annual vs perennial grass Weather Weather instruments & weather & climatic data maps, air pressure systems Air Ozone layer (importance to living organisms) gases Water Water cycle Soil Formation, types (rocks), profile, texture, composition, fertility, erosion, Energy In everyday life, sun Physical features <i>Namibia</i></p>	<p>(general/issues) Use of trees, grass Inspiration Water Water consumption Industry Economic growth (water resources & mineral resources) Oxygen & carbon dioxide (in hospitals) Farming – land use & reclamation Energy Solar panels Food provision</p>		<p>Education Local solutions (population & environmental education, sustainable production) Reduce Global warming (how to reduce) CFC's Soil erosion Political systems Legislation (veld fires) Management Systems of land use Veld management Alternative technologies Solar power Pollution Preventative measures (littering & water pollution)</p>	<p>sciences & geography) & land (Namibia) Population World & Namibia Waste Water (bad infrastructure) Global warming Causes, activities Depletion of ozone layer Soil Erosion influences plant growth & production <i>Deforestation & desertification</i> Farming practices (namibia) Effects on environ Natural causes Fire damage on trees</p>		
IGCSE	<p>Effects Population (relationship leading to over-population/under population)</p>	<p>Climate & vegetation Africa Plants/vegetation Vegetation zones, resource potential Plant growth (environmental influences, principles of land use) Principles of plant growth (some repetition geography & agriculture*) Ecosystem Definition, levels, physical factors, relationships, energy flow, nutrient cycle,, evolution, resource</p>	<p>Water Agriculture, domestic & industrial Industry Agriculture Energy Power human activity, nuclear power</p>	World diversity & sustainable development Resource potential (genetic, food base, material resource)	<p>Education awareness Management Conservation (eco systems, parks, reserves, world strategies (WWf), soil * (natural Economy & Agriculture), forests, natural resources* (Development Studies & biology), water, species 7 habitats) possibly another concept Fossil and mineral fuel/ Energy* (Natural Economy & Design &</p>	<p>Human Activity <i>Human impact</i> Illegal fishing Tourism (shortage of services) Nuclear power Mineral exploitation (possibly another concept) Marine exploitation Industrial development (health) Pollution Water (chemical, sewage, on natural ecosystem, human health)*(Biology, Geography & Natural Economy)</p>		

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		<p>potential (Natural economy & Biology*)</p> <p>Weather Diff btwn weather & climate, weather instruments, statistics, other terminology, elements, climatic types (Natural economy & Geography*)</p> <p>Air/atmosphere Solar head balance, structure, gases Temperature (plant growth)</p> <p>Water Water cycle Oceans</p> <p>Soil Formation, composition, medium for growth, classification (simple), land use (some repetition Agriculture & Natural Economy*) Fertility, types</p> <p>Energy Different forms (design & Technology, Design & communication*)</p> <p>Physical features Land forms and landscape processes (general) Renewable vs non renewable Energy & water (difference, renewable energy, water non renewable)</p> <p>The organism Characteristics, organisation & maintenance, development & continuity of life.</p>			<p>Technology) Natural disasters Water quality, quantity, access Atmosphere and Climate Trade</p> <p>Development Aid Government, NGO, food aid</p> <p>Sustainability Harvesting of wild plant & animal species Alternative/ new technologies</p> <p><i>Energy* (Natural Economy, Design & Technology & Physical Science)</i> <i>mineral & fossil fuels desalination satellite monitoring genetic engineering (forests) alternative materials (timber)</i> Farming practices <i>Sustainable agriculture</i></p> <p>Pollution Waste management Recycle Water strategies Atmospheric strategies Recycling timber</p> <p>Action International</p>	<p>Air (sulphur dioxide* (Biology & Physical Science, Geography) & carbon monoxide, oxides in nitrates, lead components) Nuclear fall out Pesticides* (Biology & Agriculture, Natural Economy) Threatening fish resources Noise Visual Marine</p> <p>Population Over population & Under-population Urbanisation Loss of biodiversity Ecosystems at risk Farming Practices Pesticides, monoculture, overproduction,</p> <p>Waste Developed countries</p> <p>Global warming Natural ecosystem</p> <p>Soil Erosion* Causes Weathering vs erosion <u>Deforestation* (Natural economy & Development Studies)</u> Changes in atmosphere</p> <p>'Natural' causes Famine Ecological disasters</p>		
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